TIIAP FY 1999
Project Narrative

Mayville State University

Grant # 38-60-99020
Community Networking
Mayville, North Dakota

Creating an Information Technology Environment in a Rural Community

Executive Summary.

This is a project intended for the Community Networking, and Education, Culture, and Lifelong Learning primary application areas with the secondary application area of public safety.

Mayville State University, a small rural institution in North Dakota has been working hard to bring technology expertise to its faculty, students, and surrounding communities. The institution was the fourth institution in the nation to provide notebook computers to all of its faculty and students. MSU took advantage of this initiative to assure that surrounding communities could take advantage of this expertise and resources.

This project will use existing facilities on the Mayville State University campus to establish a community technology center. An advanced network will be installed in the community technology center to stimulate the development of information technology businesses. Advanced Internet connectivity will be secured from the existing infrastructure by a local Internet service provider. Mayville State University, Mayville-Portland Economic Development Corporation, Traill County Economic Development Commission, and the MayPort Public Schools will partner for this project to create an environment to promote information technology but also to provide internships and job sharing experiences. Evaluation will be an integral part of the three-year project.

The long-range goal is to reverse the outmigration of people in the area by providing information technology opportunities. To achieve this goal, the community must have access to advanced Internet connectivity at a cost comparable to metropolitan areas to attract Internet-based businesses. This project is a critical component to achieve this long-range goal for economic stability of the community.

Creating an Information Technology Environment in a Rural Community

1. Project Purpose

The Problem. Rural communities in North Dakota are struggling to retain, attract, or develop local businesses that are critical for their survival. The outmigration of businesses and its people due to the poor agricultural economy has created a difficult scenario to reverse. The over dependence on agriculture and the accompanying declining farm profitability has caused local communities to rethink their economic future and consider value added enterprises, service sector development, and the all-important tools of technology. (Appendix A)

To reverse the outmigration of businesses and people, a community must diversify its economy by creating a climate conducive to economic development. Information technology businesses offer rural communities an opportunity to lessen its dependence on agriculture. Unfortunately, there are huge inequities in universal access to communication networks between metropolitan and rural areas. The city of Mayville, North Dakota struggled for several years with US West without success to provide Internet access to the community. The community was finally able to convince an independent telephone company to be the community Internet service provider, which was a big step for the community, but better connectivity is still needed to provide information technology economic growth opportunities. (Appendix B)

Mayville State University, a small rural institution in North Dakota has been working hard to bring technology expertise to its faculty, students, and surrounding communities in the region. The institution was the fourth institution in the nation to provide notebook computers to all of its faculty and students. Mayville State took advantage of this initiative to assure that surrounding communities could take advantage of this expertise and resources at the University by offering classes, workshops, and providing technical leadership.

The University is preparing highly trained employees for an information technology workforce but there are very limited opportunities for them in the area. Consequently, they must leave the local community for metropolitan areas. The community is losing a well-trained information technology workforce because the community infrastructure can not support the development of information technology related enterprises. The community has been involved in economic development efforts for many years, but can't go any further without help. The TIIAP proposal is critical to allow the Mayville community to take the next step.

The Proposed Solution. "Creating an Information Technology Environment in a Rural Community", will use TIIAP funds to provide incubator space and adequate telecommunications capabilities to the project partners in order to stimulate information technology economic development in the rural community. This proposed project would involve Mayville State University and a set of partners and players consisting of local, county, and state government entities, economic development agencies, local school districts, and public service agencies in addition to a telecommunications service provider. Key players will include a local Internet company, a national software company, and a number of small businesses that hope to expand their business with the collective support and guidance of the proposed technology center. (Appendix C)

The state university system has continued to mandate universities to encourage development of entrepreneurial activity with local businesses in an effort to stimulate economic development in a region experiencing critical outmigration. The local community has been engaged in economic development planning efforts for over a ten-year period, and this proposal will both focus and develop the community's energies in the TIIAP project's plan over the next three years.

Expansion of a local Internet business could lead to significant increases in local employment. Expansion of the state government sponsored project, Centers of Excellence in Rural America (CERA), could also lead to increases in employment through back office operations of national corporations. Implementation of the school district router-programming curriculum such as CISCO systems can lead to preparation of certified network professionals and administrators. (Appendix D)

Project Outcomes. The "Creating an Information Technology Environment in a Rural Community" project will establish a community technology center with advanced Internet connectivity. It will also provide incubator space to stimulate existing and new business ventures. Mayville State University will provide existing facilities as space for the community technology center.

The University is a critical component for the overall success of this project since it has existing programs in computer information systems and business administration. These academic programs can provide student internships and faculty expertise to further stimulate information technology growth. The University in cooperation with area schools and the community can provide training to high school students and displaced agricultural workers. Training in career areas such as network installation, network management, web design, and web management can be provided to assist the area schools and businesses by preparing the future information technology workforce. Information technology businesses in the technology center will provide a work place for displaced agricultural workers and opportunities for computer information systems and business administration college graduates.

The community technology center will provide incubator space with advanced Internet connectivity not only to stimulate Internet-based businesses but also to enhance Internet connectivity for the entire community. Advanced Internet connectivity is needed throughout the area business community. This project will bring advanced Internet connectivity to a central point, which will assist in making advanced Internet connectivity available at an affordable price for the entire business community.

By creating information technology business opportunities in a technology center in Mayville, the displaced farmer and family can continue to live and/or work on the farmstead and commute a short distance to work for additional income to retain the farm. The "family farm" is disappearing from the North Dakota landscape and with the family farmstead, its way of life. Family farms are becoming "hobby farms" which means the family can not earn an adequate income by only farming. The community technology center will assist in retaining the family farmstead that is important to rural North Dakota by providing information technology jobs. (Appendix E)

2. Evaluation Plan

Evaluation will be an integral part of the "Creating an Information Technology Environment in a Rural Community" project, examining both processes and outcomes associated with the telecommunication resources, the involvement of the community, project partners, and project players. The approach will be collaborative, engaging key stakeholders in the collection and application of evaluation data, and will be designed to meet the information needs of the sponsoring agency as well as the participants in the project. In order to manage the evaluation process a formative and summative evaluation strategy will be employed in order to make critical adjustments and solve problems while the project is in motion. This strategy will also provide an annual output analysis of data and findings at the conclusion of the project. An overall technology assessment will be included as an evaluation measure.

Key questions the evaluation plan seeks to address are those relating to the impact on the community, existing business, expansion of business, employment, salary, services provided, information technology training, use of technology, and linkages developed internally and externally to the project community. Data on these impact factors will be integral to the evaluation process.

The data will include change rates in usage of technology at community sites (Example: public service agencies, high schools, participating businesses, and libraries). Also of prime importance are data "hits" at incubator websites and transactions made from these sites. In cooperation with an external evaluator, the project staff will utilize surveys, interviews, quarterly reporting techniques, and software programs for data gathering and analysis. In terms of form, both qualitative and quantitative types of data will be gathered and analyzed.

Lin Foa, a consultant based in Potomac, MA will be asked to review a preliminary evaluation plan developed by the project director and provide assistance in the final evaluation strategy. Dr. Foa has extensive experience in evaluating multi-state technology initiatives. She is familiar with North Dakota and has served as an external evaluator for several telecommunication projects of the US WEST FOUNDATION. Based on Dr. Foa's recommendations, instrument development, data analysis, and data management support will be identified. On-site data collection will be provided by student research assistants from Mayville State University's Business Division and Computer Information Systems program.

Overall evaluation and assessment constitutes a critical part of the project; therefore it is planned that no less than 5% of the budget should be allocated for this work. Mayville State University believes that a thorough assessment is needed with the project and therefore a budget for staff time, management, and required travel is justified.

3. Significance

The focus of the proposed TIIAP project is to develop a technology center with the expressed purpose of stimulating economic development in Traill County and surrounding rural counties in North Dakota. With the combined objective of developing Internet and other information technology business incubators and also education of public school and university students at the same site, a maximal impact of federal, state, and local funds is achieved. An existing Internet

business, (ComMark, Inc.) and the office of the Traill County Economic Development Commission have agreed to be participating occupants of the community technology center proposed at Mayville State University. The university has also pledged 11,536 square feet of dedicated space and time of the university Chief Information Officer to serve as the project director. An internationally known software manufacturer (Great Plains Software) is also a candidate for housing in the proposed technology center, as it has a strong relationship with Mayville State University through their collaborative internship programs. A regional development effort through the Governors' office of the States of North Dakota and Wyoming (CERA) will place high technology professionals from urban centers in four rural communities, one of which is Mayville. The proposed technology center will provide capabilities for these professional employees.

A proposed expansion of ComMark, an Internet company in Mayville, has conservatively estimated that l00 employees may be needed for this expansion effort. Other benefits of the technology center are improved connectivity for public services, public schools, and public safety.

All of the foregoing narrative indicates a significant shift from the traditional agricultural economy to an emphasis on developing information technology related businesses. This shift also requires training high technology workers to fill these new positions. This effort will not only develop the economy in our rural region, but it will help control outmigration by providing incentives to parents, students, and displaced workers to remain in our region.

4. Project Feasibility

Technical Approach. . The "Creating an Information Technology Environment in a Rural Community" project will require the establishment of a community technology center, advanced Internet connectivity to the center and high school, infrastructure hardware and software for the center, and other resources to effectively use existing telecommunications systems to achieve the project goals. One of the major factors that will make this project feasible is the availability of existing space on the Mayville State University campus. That space will easily accommodate an information technology business environment with minor renovation. Business incubator spaces in the community technology center will vary from approximately 120 square feet to 400 square feet. (Appendix F)

All incubator space in the technology center will be equipped with high-speed local area network nodes with Internet connectivity for data transfer or video conferencing for information technology related businesses. The 100-megabit local area network with 96 nodes will be installed in the existing structure with the flexibility to expand the network. The technology center will be connected to the Internet using services provided by Polar Communications.

To create an environment which will stimulate "start-up" information technology businesses, the technology center will have the following network facilities: Novell and Microsoft NT operating systems for servers and client software, a file and print server, a proxy server for caching and firewall, a web server, an e-mail server, and a network printer. The incubator space will also have basic furnishings and utilities to assist "start-up" businesses. The technology center will

provide a partial "turn-key" operation to keep expenses for the new business to a minimum. Mayville State University students will be able to assist new businesses through directed and special studies, and internships.

The local area network in the technology center will have a high-speed connection to the Mayville State University local area network and the MayPort High School local area network. The interconnectivity of these networks will allow Mayville State University and MayPort High School students opportunities to participate in information technology internships and job sharing experiences in a telecommuting environment. The simulated telecommuting environment will provide remote work experience for university and high school students, supervised and unsupervised, in an environment which is not time or place dependent. The telecommuting environment will serve as a valuable learning experience for the future area work force. This project will also serve as a pilot for local service providers to assess advanced Internet connections for the community with the goal of providing universal access at a cost comparable to metropolitan areas.

The interconnection of these networks will provide an opportunity for the sharing of resources and technical support that will contribute to the long-term stability of the infrastructure. Existing computer labs and other facilities at the partner sites will be accessible for support and training. All systems used in this project use common Internet applications: standard e-mail accounts available through public or private providers, TCPIP protocol, university/school LANs/WANs, dial-up connections, and commercial hardware and software.

Applicant Qualifications. Mayville State University will serve as the lead organization in this project. Mayville State University has an unique mission in the North Dakota University System, "…. commitment to innovative technology-enriched education and dynamic learning relationships with community, employers, and society." Mayville State University Information Technology Services will coordinate the network infrastructure and other technology components of the project and will provide overall organizational management. Mayville State University will also serve as the fiscal agent.

Mayville State University is currently completing its second year as a "notebook university". Information Technology Services was charged with the installation and on-going maintenance of the network infrastructure, networked/multimedia classrooms, and the help desk. The notebook requirement for students and staff requires Information Technology Services to manage and maintain 800 academic notebook computers and 100 administrative desktop computers.

Keith Stenehjem, Ed.D., Chief Information Officer at Mayville State University will serve as project director for the "Creating an Information Technology Environment in a Rural Community" project and will co-chair the project implementation team. Dr. Stenehjem has previous involvement in statewide information technology projects involving higher education and rural communities. (Resumes of all key project personnel are in Appendix G)

Rick Forsgren, Executive Director, Traill County Economic Development Commission will serve as coordinator of business development for the community technology center and will co-chair the project implementation team. Mr. Forsgren owned and operated a community business prior to his current role as economic development executive director.

Faculty from Mayville State University and MayPort High School will provide expertise in computer information systems and business administration. Both have committed to this project and have the support of their respective administrations.

Budget, Implementation Schedule, and Timeline. Complete budget information for the "Creating an Information Technology Environment in a Rural Community" project is found in Appendix H. The budget represents cash and in-kind contributions from the project partners and TIIAP grant funds. Additional resources will be secured as the project develops in the form of rental income from the incubator space in the community technology center.

TIIAP funds will be used for project activities over thirty-six months, beginning October 1999 through September 2002. The months from October 1999 through January 2000 will be used to prepare for project start-up: project organization, network infrastructure installation, and minor renovation to facilities. During the first 18 months of the project, the focus will be to recruit incubator businesses and to expand current businesses. The second 18 months will be used to assist the incubator businesses to develop and become stable businesses for the community, plus on-going recruitment of new businesses will continue. The final project report will be completed once the project has concluded.

Sustainability. Creating an economic development climate to reverse outmigration will be an on-going concern for North Dakota. The project partners have made a commitment to continue economic development activity and to encourage and stimulate information technology enterprises beyond the grant timeline. Business incubator space will continue to be rented as a source of income to sustain the technology center. This proposal will assist in the future availability and cost reduction of advanced Internet access. This access to the community will be a factor in the project continuance. If this project achieves the positive results expected, its sustainability in the Mayville community will be greatly enhanced.

5. Community Involvement

Partnerships and Involvement of the Community. The partners in the "Creating an Information Technology Environment in a Rural Community" project are Mayville State University, Mayville-Portland Economic Development Corporation, Traill County Economic Development Commission, and MayPort Public Schools. The major tenants at this time in the proposed community technology center are ComMark, Inc. and the Traill County Economic Development Commission. Their letters of support and commitment are included in Appendix I.

Other cooperative relationships have been established with community and state groups/leaders/industry, particularly with those concerned with technology and economic development. Letters of support are also appended from the CEO of Union Hospital, the Manager of Seatol, the General Manager of Valley Equipment, Mayor of the City of Mayville, the Director of Recruitment & Public Relations of Great Plains Software, the Chancellor of the North Dakota University System, and the Governor and Lieutenant Governor of the State of North Dakota. (Appendix I)

Other groups will be asked to be involved as well: local and area businesses with information technology needs and all schools in Traill County; Central-Valley, Hatton, Finley, and Hillsboro. A Community Advisory Committee will be formed to involve community and area business leaders, to promote the technology center, and to gain valuable input for economic development.

Support for End Users. The incubator businesses, other area businesses, and students involved in this project will have access and develop competencies in a purposeful way to use e-mail, data-collection and transmission, and other Internet tools as developed. The businesses will use these tools to create and sustain productive information technology businesses. The students will use these tools for 'real work' experiences in an entrepreneurial atmosphere that will promote the addition and growth of incubator businesses. The project will also stimulate the community communication infrastructure to enable incubator businesses and other businesses to locate in the community with the assurance of reliable, cost effective advanced Internet connectivity.

The community and area businesses involved in this project will show how advanced Internet connectivity can be used to develop and sustain viable businesses and attract new businesses in a rural setting. The information technology businesses will provide job opportunities for university and high school students, and displaced agricultural workers.

Privacy. The project implementation team will take steps to ensure privacy issues. The network infrastructure design has taken into account privacy with the incorporation of a network firewall and other network and e-mail password protection measures.

6. Reducing Disparities

Mayville State University is located in Mayville, North Dakota (population (2100) and serves a population in Traill County and surrounding counties. The county is heavily dependent on agriculture and the population is declining (n of 8752 in 1990 and 8482 in 1996). The number of full time farms has decreased 12 percent from 446 farms in 1992 to 392 farms in 1997 according to the Census of Agriculture. Per capita income in Traill County ($18,414) trailed the state average ($18,611) and the U.S. average ($21,597) in 1996. The market value of agricultural products sold has decreased one percent to $84,519,000 in 1997, which parallels a general downturn in farm prices and energy prices ($11/barrel) in 1998. Unemployment in Traill County is currently running about 2.4%. Population density is 10 per square mile and the population itself is an aging population like most rural counties in North Dakota. Farmers are increasingly older on the average and young people are increasingly disinterested in the vertical handing down of farm land from one generation to another; however the younger generation is becoming more interested in horizontal assimilation related to what other members of their generation are doing; namely dealing with technology and working outside of agriculture. In terms of the education population, there are presently 9,000 high school seniors and 7,000 four-year olds in North Dakota. The number of high school graduates is expected to decline 25% by the year 2008 according to the U.S. Census researcher Dr. Richard Rathge of North Dakota State University. Another economic indicator in Traill County is the empty business buildings; six in Mayville, three in Hillsboro, two in Portland, three in Hatton, and one in Galesburg. These empty buildings range from 3500 sq. feet to 22,000 sq. feet. (Appendix J)

The message seems eminently clear that the county and community must diversify the economic base. Information technology precisely provides that opportunity. With the assistance of Mayville State University and its partners, a technology center offers the opportunity for residents to enter and develop information technology related businesses, whether the person is a local merchant, displaced farmer or housewife, or entrepreneur. New careers in information technology will be made available to high school or college students to take advantage of the information technology opportunities in the proposed technology center. A work and training center within driving distance in Traill County and to surrounding counties has the potential to reduce outmigration to larger urban centers by providing connectivity close to home. In the past three years one of the proposed telecommunication players has connected 199 Internet lines in Mayville and a school bond issue funded 210 connections in neighboring Hillsboro. Mayville State University has made Internet access available to all faculty (45), all staff (110) and all students (750) and connectivity is provided via a campus local area network and dialup access for off campus users. Yet the community is basically not connected. Greater bandwidth can greatly reduce the disparity in the community.

7. Documentation and Dissemination

The "Creating an Information Technology Environment in a Rural Community" project will by design disseminate its activities to the public. The World Wide Web presence, interactive videoconferences, and involvement of local and state press coverage will all make this project widely known. Incubator businesses on the Internet will record “hits” or site visits made daily and monthly, also a record of transactions will be made on an interval basis that will detail success of business activities. Web links with CERA partners in Denver and their SAIC offices in Los Angeles will have a constant flow of communication for the purpose of disseminating news on activities of the community technology center and thereby reaching a continuous number of prospects for incubation at the Mayville center. (See CERA brochure, Appendix D and North Dakota’s Governor's letter, Appendix I) Students, faculty, and businesses will also provide information about this project to the annual statewide Technology Conference in Bismarck and the regional economic development Trade Summit sponsored by the Red River Trade Corridor (A regional economic development organization representing northern tier states and Canadian Provinces of Manitoba, Saskatchewan, and Ontario). The project director and the coordinator for business development will also propose presentations to the National Educational Computing Conference (NECC), EduCause, and the National School Boards Association. They will also be available for dissemination of opportunities identified by TIIAP and other federal agencies with specific interests in rural economic development (Examples: Departments of Agriculture, Commerce, and Education).