Nebraska Information Technology Commission

Project Proposal Form

Project Title	**Last Mile Wireless Effort**
Agency/Entity	**Wayne State College**

Section I: General Information

Project Title	Last Mile Wireless Effort
Agency (or entity)	Wayne State College (WSC)

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Section II: Executive Summary

The goal of this project is to provide a wireless Internet service and a municipal area network that might be used to demonstrate how various groups supported by tax dollars might share their technology resources. This could be used as a statewide model for service delivery in comparable communities.

The initial goal is to connect Wayne State College to the City of Wayne with a wireless Radio Frequency (RF) connection. The City of Wayne will then connect its other buildings to their main building via similar wireless connections and therefore create an administrative computing network. The wireless connection to Wayne State College will provide the city with Internet bandwidth. In addition, the College will provide leadership and training to the city in technology and wireless networking and thereby start a collaborative process that will help train a technological workforce.

The second phase of the project is to invite (do you mean invite? or include) the Wayne Public Schools, Wayne County, and other tax supported entities in the deployment process.

The desired outcome is a more technologically literate work force at all sites, overall resource requirement reduction through collaboration, and a more functional, integrated electronic community.

Section III: Goals, Objectives, and Projected Outcomes (15 Points)

This project is fully intended to be a last mile telecommunications solution that could easily be adapted by other cities with similar support needs and opportunities.   The goal is to connect the City of Wayne in a wireless format with Wayne State College. It is WSC's intent to leverage the college's support mechanisms to advance opportunities for the greater community, which is well within WSC's charge as a regional college in Nebraska.   Our vision statement is: **Wayne State College will be a regional and national model for strengthening rural communities through student learning, service, and leadership.**

The project intends to connect Wayne State College to the City of Wayne via wireless technology and provide leadership to accelerate their technology advancement. This last mile service will provide the city with Internet access to all city facilities that are critical to their mission of serving the general public. The City of Wayne has a total of 50 computers compared to Wayne State College that supports 1600 end user PC's. Wayne State College's peak Internet utilization is during the early evening and into the night. Wayne State College has open bandwidth that could easily be utilized during the day by the City of Wayne or other public entities and not create any additional resource requirement. This will save tax dollars and allow the City of Wayne to establish its own municipal area network without incurring the very expensive deployment of terrestrial networking.

- Since Wayne State College expects to extend this service opportunity to Wayne Public Schools, the Wayne County Courthouse, and other tax supported entities in the community, the above-designated groups can be named primary beneficiaries. The taxpayers of the City of Wayne, Wayne County, and the State of Nebraska benefit through this aggregation as their technology costs for this area are reduced significantly as well as the opportunity to improve their networking services.
- It is expected that in two years the result will be a totally connected and aggregated resource deployment in technology that will save the taxpayers money, provide a much needed last mile telecommunications solution, and help us grow our own technologists.

The measurement and assessment method is really not very difficult to outline, but it is not scientifically elegant.   Information will be collected from each entity to identify what it will take for this plan to be successful for them in the short term and in the long term.   The agreed-upon outcomes will be evaluated to determine whether the needs were met or not.

Wayne State College's comprehensive technology plan does provide for the college to become an active force in our service region in the form of providing technology leadership that will enable our regional to be more technology aware and progressive.

Section IV: Project Justification / Business Case (25 Points)

The City of Wayne has the following buildings that need to be connected in some manner: Main city office building, electrical distribution building, electrical generation facility; water treatment facility; fire hall, library; and community activity center.

The City of Wayne could never afford to connect these building with fiber. It would cost over $400,000 and is really not cost effective. The wireless connections will cost well under $30,000 if completed in a turnkey fashion. The City of Wayne will assume financial responsibility for the project.

At this time the City of Wayne does not have an enterprise Internet connection. They use Digital Subscriber Lines (DSL). DSL does not provide for a complex, city wide centralized data network nor does it allow for local control. Connecting the City of Wayne to Wayne State College will require very little investment and will provide low cost Internet bandwidth in an aggregated fashion. The initial connection likely will not have any cost implications, as it will simply be a load leveling function of aggregation.

This project is not the result of a federal or state mandate. It does however address a serious concern for the State of Nebraska and all of its taxpayers. Last mile telecommunications solutions have always been available, but they have generally either been too expensive to implement, or too restrictive in use. This project takes advantage of new wireless technology and is scalable at a price that is affordable. This project does address Homeland Security and the lack of affordable last mile telecommunications solutions in Nebraska in a very meaningful way. There are a number of communities that could affordably adapt and implement this model .

Section V: Technical Impact (20 Points)

This plan replaces the City of Wayne's DSL implementation and launches them into a centralized, standardized technology environment. The overall approach will allow them to become more efficient users of technology.

 Initially, the wireless 802.11b standard has been chosen for the wireless implementation between buildings. In buildings that are not wired and with few personal computers the same technology will be deployed for internal use. In the event that this standard becomes unusable for this project, Wayne is positioned to apply for its own broadcast zone.   Routers are to be used at each end in the areas where security is a real concern. The Cisco routers will allow encryption. In the areas where security is not a concern, browsers will be used with encryption.

One strength of the project is the willingness of the entities to move forward. The project is considered to be low cost and manageable. .

This project uses technically standard equipment in the telecommunications industry. The 802.11b and 802.11a wireless standards are accepted within the industry.

Section VI: Preliminary Plan for Implementation (10 Points)

The preliminary plan is:
- a)   Orally present plan to the NITC Tech Panel <u>October 9, 2002</u> for their advice (Completed)
- b)   Complete Project Proposal Form for NITC before November <u>8</u>, 2002 meeting
- c)   Secure final project approval from Wayne State College President in November 2002
- d)   Secure final project approval from Wayne City Council in November 2002
- e)   Secure project bidding process and bid in early December 2002
- f)   Order required equipment by mid January 2003
- g)   Install first piece of equipment by mid March 2003– connecting city to campus
- h)   Complete building connections by July 2003
- i)   Start phase II…connecting the Court House and/or public school

At each phase the city technician will work with Network and Technology Services personnel from Wayne State College. On-site training and support will be supplied prior to the project implementation. Training will include preliminary documentation, setup, installation, operation, and post documentation.

This project will break new ground in the area of support and maintenance related to technology distribution in Wayne, Nebraska. It is anticipated that ongoing communication regarding support needs, professional development, and overall system planning will now be required. In the past these items were done as a courtesy with little communication between entities.

Section VII: Risk Assessment (10 Points)

Cleary wireless technology is a technology that is on the verge of being the technology of choice. It is highly serviceable and constantly improving. Fiber has been the standard bearer for years and offers several advantages at the present time. The advantages are in the area of capacity. Fiber does have disadvantages as well. They are in the area of cost and ease of installation. Fiber and wireless are both here to stay. Fiber is mature and wireless is evolving.

Industry specialists have indicated that weather and other natural effects have not had serious effects on wireless performance. Cleary fiber can be cut and it has been known to have collisions with a backhoe that can and do cause more long term service issues than weather will for wireless.

Providing Internet service to the City of Wayne, Wayne County, and/or Wayne Public Schools is clearly a goal. 802.11b is clearly capable, in a point to point connection, of providing the participants with the needs of today and the long term. 802.11b does provide in point to point service 20 times the bandwidth that the City of Wayne presently deploys. The college is clearly positioned to support all entities technically with technical equipment presently in place and track peak entity use and bill according to use.

Clearly this is a voluntary opportunity for all entities. They are free to participate or not participate. We are offering services that will allow for more support, broader implementation capabilities, and be much more scalable than present implementation.

The college purchases their telecommunications from Qwest. The City of Wayne purchases their DSL from Connection Point in Norfolk. Connecting Point purchases their DSL from Qwest. Connecting Point will, as the middle man, be eliminated from the plan.