Wireless Neighborhoods Business Plan
Executive Summary
Prepared by Information Renaissance
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1. Communications networks encourage the development of human networks, helping students learn and communities grow.

The world is changing. Communications technologies and the Internet are revolutionizing the ways in which people interact -- in the economy, in education, in social interactions, and, more specifically, in community group programming. The worldwide network of computers connected through the Internet opens up a wealth of new sources of information, information with a breadth and currency that even libraries find difficult to maintain. On a local level, it is also possible to create a network that is not subject to the congestion of the Internet and that will have the speed that will enable community groups to collaborate with each other and share resources as though they were in a common office.

The Wireless Neighborhoods Project is creating a community-based, high-speed Wide Area Network (WAN). The WAN enables its participants to share a common high-speed connection to the Internet, spreading the costs of an otherwise unaffordable resource among participants on an affordable basis. It also connects the computers of the participants together in a high-speed network that enables non-profits, the school district and others to work more closely together, sharing data, software, programming content, and technical and programming expertise.

At the same time, the communications networks promote a collaborative human network of relationships and activities. The initial focus of the Project's organizers was to create a physical network infrastructure that could serve as a necessary platform (high-bandwidth Internet access and WAN connections) to do programming to serve their communities. What they also discovered along the way was both that the physical network makes collaborations among groups possible and that the organizational effort spawned closer human relationships that lead to collaborations in additional dimensions and increased sharing of ideas and resources.

In terms of programs, the underlying focus of the Project's organizers has been the improvement of their neighborhoods and the lives of their residents. They want to develop more and better programs to help kids read and write and to help communities grow. They see the physical networks as a tool or platform to help them produce and deliver these programs.

In education, Wireless Neighborhoods helps community groups work more effectively with schools and each other on community literacy projects. With high-bandwidth network links to schools and libraries (over the WAN), students can continue their school work after school, getting after-school access to materials maintained inside school and library networks. Kids can also improve their reading and writing skills in new

community group programs, such as "digital community newsletters" and "digital storytelling," where kids research contemporary community issues and present their thoughts in narrative and visual stories.

In economic development, Wireless Neighborhoods makes high-bandwidth Internet services available at affordable prices in disadvantaged neighborhoods. The availability of these services can help improve the competitiveness of existing businesses and attract new businesses. A high-bandwidth telecommunications network is truly the key infrastructure of the information-based economy, just as streets, bridges and utility lines were the infrastructure of the industrial economy. Communities with access to this infrastructure will be able to participate in the new economy. Those lacking access will lag behind. The extension of the high-bandwidth telecommunications network into developing communities, such as East Liberty, and the deliberate inclusion of modern telecommunications infrastructure in office building projects there will also enable small for-profits to gain the competitive advantages of high-bandwidth Internet access at affordable prices, improving the communities' economic vitality.

With the help of The Heinz Endowments, the organizations in the Wireless Neighborhoods Working Group have been working together both on joint programming and the network infrastructure to make the programs happen. The organizations include representatives from the Bloomfield Garfield Corporation, Community House Church, East Liberty Development, Inc., the Hill House Association, the Hill Community Development Corporation and the Parental Stress Center. The groups have been working with Information Renaissance, which has been providing technical assistance and designing and installing the network's infrastructure. The groups have also recently received a $400,000 grant from the Pennsylvania Department of Community and Economic Development (DCED) to help implement a digital student newsletter and to fund new segments of the network.

To date, network equipment has been installed on the WQED Tower in Oakland and the Regional Enterprise Tower. A high-bandwidth wireless link has been established to the Pittsburgh school district connecting users to every school in the district. Nine community groups have been connected. The DCED grant will fund at least 20 additional groups, and more are planned. Work is underway to install a neighborhood hub in the steeple of the East Liberty Presbyterian Church to serve many more groups in the East End. A "tool kit" has also been developed to show building owners how to wire and equip their buildings with modern infrastructure.

The Heinz funding also made this business plan possible. The plan anticipates the parallel development of programming and network efforts. Programming will be developed by the community group members of the coop -- with or without the active participation of the coop's management as the groups may wish. Programming will be pursued on a variety of timescales with a multiplicity of funding sources. The projects of some users will focus on education; others will focus on economic development. Other coop members, such as for-profits, may be interested primarily in affordable Internet access.

The coop will install and operate the network, providing the platform the groups need for their programming and coordinating its plans closely with the community groups to ensure that the groups' interests are met. This relationship will entail joint planning and fundraising.

The business plan explores the use of the cooperative to build and operate the WAN and provide high-bandwidth Internet services, and it describes the continuing relationship the cooperative will have with the users of the network. It outlines in detail the organizers' goals, the operational, financial and organizational elements of the cooperative and the next steps to take to move forward. The plan quantifies the costs of deploying high-bandwidth infrastructure in their neighborhoods and the prices and numbers of customers required to sustain the provision of the services.

This Executive Summary provides an overview of the business plan.

2. Goals.

a. Programming and community group collaborations. Technology developers often present flashy displays of what their technologies can do, but skeptics ask whether the technologies will actually be useful for things people need. The skeptics often complain that organizations buy expensive computers, video-conferencing equipment and other technology, but they fail to use them productively.

The organizers of the Wireless Neighborhoods Working Group want to integrate the Internet and WAN technologies deeply into community group programs -- to help kids read and write better and to help their communities retain and attract businesses. The Wireless Neighborhoods groups are using the Internet and the WAN in exciting new educational programs, such as shared software initiatives and the digital community newsletter.

The PAWS career development software, for example, which the Pittsburgh Public Schools use to help elementary school students learn about careers and the skills needed to pursue the careers, has been placed on a server in Info Ren's offices attached to the WAN. The software is accessible over the WAN to be shared in after school programs at the various community sites participating in the network. This shared access to a resource hosted on a central server and accessible to large numbers on the network promotes greater access to educational resources and saves costs. DSL and cable modem services lack the bandwidth required to access such software from such servers. Wireless Neighborhoods is working with the school district and others to host and serve additional software to its participants.

The digital community newsletter uses streaming video to help students improve their reading and writing skills. Students in the project research and write stories on issues in their lives and neighborhoods. They use digital cameras to produce a videos of the stories, and they place the stories and the videos on a website -- the digital community newsletter. The project provides an engaging way for students to learn; and the network

provides the bandwidth required to distribute the videos. DSL and cable modem services are generally insufficient for this purpose.
Wireless Neighborhoods participants are also integrating the technologies into economic development programs. New and renovated office buildings are being built with modern telecommunications infrastructure and access to high-bandwidth network services. Developers consider such infrastructure to be a necessary component of modern building space; and they see the infrastructure as providing a marketing advantage over more traditional office space in other neighborhoods..

b. Infrastructure and services.
(i) Infrastructure and services to support education and workforce, economic and human development. The Wireless Neighborhood organizers want to develop infrastructure and services through the creation of a cooperative that will enable them to use technology to enhance their abilities to provide programming in education and workforce, economic and human development.

(ii) High-bandwidth Internet access. The organizers want Internet access at bandwidth rates greater than those offered by current service providers. They want Internet access at the minimum of the 10 Mbps connection available through the Smart Building Project in the Regional Enterprise Tower, instead of lower performance DSL and cable modem connections. DSL and cable modem services lack the bandwidth required for data-intensive applications using the Internet.

(iii) Wide Area Network connections between users. The organizers also want high-bandwidth network connections among themselves over a Wide Area Network (WAN) at data rates equal to the rates available over a typical office Local Area Network (LAN). This goal will make the same uses of a network possible among collaborating community groups as are possible among the workers in a typical office, enabling innovative collaborative projects in education and community and economic development. DSL and cable modem services are also not sufficient for these purposes.

(iv) Prices affordable by small organizations. The high-bandwidth services currently available from traditional service providers are priced too high for small non-profit and for-profit organizations. The organizers want affordable prices.

(v) Prices to recover recurring costs without long-term subsidies (sustainability). The organizers want the desired services at the desired price levels on an ongoing basis -- without the need to rely upon continuing subsidies from foundations and government grants.

(vi) Infrastructure and service available everywhere. The organizers want infrastructure and service in neighborhoods throughout the City -- inside and outside the Central Business District -- and to community groups generally, not only to the best-funded organizations.

(vii) Responsiveness to community needs. The organizers want control over the infrastructure to be able to provide the services they want on terms that satisfy their needs.

(viii) Dedicated technical assistance. The organizers want affordable technical assistance, using the Smart Building model of a shared support staff, with affordable prices resulting from the spreading of costs among a large number of users.

(ix) Ability to serve for-profits. The organizers want to serve for-profit companies for two reasons -- to promote economic development in distressed neighborhoods and to promote the coop's sustainability by increasing the customer base. Unlike the 501(c)(3) status of local organizations pursuing similar goals, a cooperative can provide service to for-profits, non-profits and even residential users.

3. Strategies

a. Programming strategy. Coop members will develop and conduct programming in parallel with the coop's build-out and operation of the network. The groups will maintain a continuing relationship with the coop in their capacities as customers/members (with the right to vote on the governance of the cooperative) and through close, continuing coordination to ensure that the network is sufficient for the groups' programming needs. The members will also collaborate with the cooperative to raise necessary funds.

b. Infrastructure strategy. The initial strategy of the coop's organizers was to obtain a fiber optic infrastructure through the recent renewal of the AT&T Broadband franchise agreement with the City of Pittsburgh. As it became clear that the fiber optic infrastructure would not immediately be possible, the organizers investigated the feasibility of wireless technologies.

The result is a high-bandwidth wireless network, supplemented as necessary with fiber optic and other cabling. The initial network will have its primary hub on the WQED Tower in Oakland and will use secondary neighborhood hubs at sites strategically located to reach customers that lack clear lines of sight to the WQED Tower[1]. Customers will connect to the WQED Tower or neighborhood hubs with subscriber units (packages of antennas and radios) installed on roofs or prominent points of participating sites. The network will have a 60 Mbps wireless backbone linking the RET, the WQED Tower and the neighborhood hubs and will use a combination of 11 and 60 Mbps technologies as "last mile" connections from the hubs to individual users.[2]

Fiber optic cabling may be used to connect several adjacent buildings with a single subscriber unit. Similar cabling may be used to reach buildings in areas where fiber is available on an affordable basis or where the buildings lack clear sight lines to a hub on the wireless network.

[1] As the network grows, the backbone may be expanded to additional tower sites or to prominent buildings with high elevations.

[2] The 11 Mbps technology is expected to be upgradeable soon to 54 Mbps.

The network will use a high-bandwidth upstream Internet connection and will provide local network connections between users at the minimum rate of 11 Mbps

c. Business strategy. The business strategy of the cooperative has three primary elements -- (1) funds from foundations and public agencies for capital costs, (2) user fees for recurring costs, and (3) the cooperative form of business organization for community control, the use of cost- versus market-based pricing, and to maximize fundraising opportunities. To minimize costs (and, therefore, prices), the coop aggregates demands for bulk purchases and discounts, shares resources and services to obtain low average costs per user, and uses cost-based pricing.

4. Services

a. Internet access and Wide Area Network connections.

(i) Shared, burstable high-bandwidth Internet access. The Wireless Neighborhoods Project purchases a high-bandwidth connection upstream to the Internet and resells the connection to customers as a shared, burstable service. A shared, burstable service provides all users with equal access to the full amount of the upstream Internet connection. None of the users requires continuous access to the full capacity of the connection (and none could afford a 10 Mbps connection dedicated exclusively for their use). The shared burstable service takes advantage of the intermittent nature of most Internet use, allowing users to burst to the capacity available at any time, while paying a fraction of the cost of the full connection. The result is a high-bandwidth connection for each user at a price substantially lower than the price for a dedicated, discrete block of bandwidth.

(ii) Wide Area Network connections and "Local Loops." The wireless connections serve two functions. They connect customers to the upstream Internet connection ("local loops"), and they link each customer to the other customers (WAN connections). For most non-profit customers, the WAN connection and local loop will be bundled into a packaged Internet access service. However, local loops can also be sold independently without the cooperative's Internet connection -- to ISPs that would bundle the local loops with the ISPs' upstream Internet connections. The coop's advantage here is its ability to charge a lower price than traditional providers charge for high-bandwidth local loops.

(iii) Dedicated, dialable blocks of Internet access. Unlike the shared, burstable services described above, discrete blocks of service -- for Internet access and/or local loops -- reserved entirely for a single customer will also be provided as a service. This service is more costly to provide and will be offered at higher prices.

b. Services hosted on local servers. A second level of services (beyond Internet access and WAN connections) entails the use of servers and personnel to manage them. These services include traditional email and web hosting and can extend to high-bandwidth applications, such as the sharing of software and files and special kinds of web hosting, such as streaming audio and video. The coop will also provide "video-conferencing services," ranging from equipment rentals and technical assistance to the use of "bridging" software that ties multiple participants into a single conferencing session.

c. Technical assistance. The third level of service is technical assistance. Technical support (i.e., "LAN maintenance", user support and consulting) is a valuable service for small businesses and non-profit organizations too small to afford their own technical staffs. The coop will spread the costs of a user support staff (as used in the Smart Building Project) among the coop's customers in the same way it distributes the costs of the upstream Internet connection. Both are shared resources to be used by all tenants, and the costs per user drop as the number of users increases. The dedicated staff also encourages the use of technical assistance by presenting a familiar and consistent set of support staff.

The cooperative can also train its members to provide an escalation path for the resolution of technical problems. Members' staff might be trained as the first level of response for other members' technical questions.

5. Customers.

a. Non-profits, for-profits & residential customers. The primary customers will be non-profit organizations and for-profit customers. The cooperative model was chosen, in part, to enable sales to for-profits without jeopardizing the tax-exempt status of a 501(c)(3) group.

b. "Anchor" customers. "Anchor" customers -- contributing a disproportionate amount of the coop's revenues -- will include large public institutions, such as the City, County, schools or libraries, or large for-profit institutions. The services to these customers could include primary or back-up network connections and technical assistance.

c. Resellers -- ISPs and building owners. The cooperative will also sell service to resellers -- to ISPs and to building owners. Services sold for resale will be sold at a price that represents a discount from the market-based retail price for such services but above the incremental cost of providing the service.

d. Non-members. A coop must charge cost-based prices to its members, but it can charge market-based prices to non-members -- subject to the limitation that no more than 15% of the coop's revenues come from non-members. These above-cost sales may be important to help recover the cooperative's recurring costs on a sustainable basis.

6. Marketing Strategies.

The basic points of the marketing strategy are the following:

-- Show users what they can do with high-bandwidth Internet and network services.
-- The uses cannot be accomplished with lower-bandwidth DSL and cable modem services.
-- The coop's services are priced at the same levels as the DSL and cable modem services.

The coop will provide high bandwidth Internet service (bursting to 10 Mbps) and WAN connections for the same prices ($100 to $150 per month) at which for-profit companies provide lower bandwidth services (.384 to .768 Mbps) such as DSL and cable modems. Or, stated differently, we will provide high bandwidth services at much lower prices than the for-profit companies provide similar services (in the range of $1,000 to $4,500 per month). That is made possible by the grants the cooperative receives to fund capital costs, the use of shared resources and cost-based pricing.

The coop will use additional educational efforts to attract small non-profits. These will entail demonstration projects -- the education and economic development demonstration projects undertaken by the Wireless Neighborhoods groups -- showing how the non-profits can use the connections in their programs and in collaborations with others. The marketing will be undertaken by community organizers deployed in geographic clusters The organizers, funded through the DCED grant, will educate their neighborhoods about the network and its uses, enroll participants and help integrate the use of the network into the community.

For-profit customers and resellers of ISP services will be engaged through the price and service differentials and with a showing of reliability. Building owners will be attracted through the advantages displayed in the economic development demonstration projects and the Mini-Smart Building Tool Kit, which will describe the advantages of smart buildings and how to develop them. Even non-members, who will be charged on the basis of discounts from market-based prices, will achieve substantial savings.

7. Competitors.

The cooperative is targeting a specific market niche. The cooperative's organizers are attempting to satisfy an unmet need for high-bandwidth services at prices affordable to users on the scale of a small business. Commercial service providers do not offer a truly competitive service in terms of the combination of service and price. Commercial providers offer high-bandwidth services at prices too high to be affordable. The services they price at affordable levels, such as DSL and cable modems, lack the bandwidth required for the high-bandwidth programming (i.e., shared software, high-quality streaming video and video-conferencing) desired by the community groups.

Ironically, the cooperative also has a competitive advantage over most commercial providers. Traditional service providers have billions of dollars invested in legacy telephone and cable television infrastructure, which the providers are adapting to provide data services. The phone and cable companies are reluctant to make new investments in new technologies that will compete with their own legacy investments. The coop, by contrast, is unburdened with legacy infrastructure and can proceed immediately with lower-cost wireless installations.

8. Financial Plan.

The primary financial goal is to create a network that is financially sustainable with user fees that are affordable by small non-profit and for-profit organizations. The keys to achieving this goal are (1) the enrollment of a sufficient customer base, (2) the ability to

raise the capital funds for the required number of customer installations and (3) the ability to raise the funds required to subsidize the recurring costs until the coop reaches the breakeven level of revenues.

Based upon a proposed initial pricing level of $100 per month per 100 kbps of average use, the business plan estimates that the cooperative can reach a breakeven level of revenues with 175 customers, the raising of approximately $1 million for capital equipment and $450,000 for recurring costs over the 4 years required to enroll the breakeven level of customers.[3]

Breakeven number of customers	Approx. 175
Capital costs for the breakeven level of customers	Approx. $800,000
Price for Internet access	$100[4]
Time to reach breakeven	Approx. 4 years
Recurring cost subsidy until breakeven	Approx. $425,000
Total funds required to reach breakeven	Approx. $1.2 million

As noted above, customers will be enrolled through a variety of mechanisms. Neighborhood-based organizing efforts will target small non-profit customers and for-profit customers. Coop staff will target larger customers. As noted earlier, the project currently has nine customers, and the DCED grant will add at least another 20.

An active fundraising effort will target foundations and government agencies interested in community-based education and economic development programs. Grant applications will be developed in conjunction with community participants, combining requests for programming, infrastructure and recurring costs into each grant request.

This fundraising approach has been successful to date, resulting in the $400,000 grant from DCED, the $200,000 in funding from The Heinz Endowments and $70,000 from Verizon. Similar grant applications have been submitted for workforce development projects -- $500,000 requests to both the U.S. Departments of Commerce and Labor. Grant applications has also been prepared for the DCED's Neighborhood Assistance Program which provides tax credits to companies donating money, equipment or staffing to approved community programs. Additional grant applications are being prepared with additional community partners and grant sources.

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[3] The estimated capital costs required to achieve a breakeven number of customers is based upon the assumption that coop customer spending levels will equal the spending levels of the non-profits in the Smart Building. The Smart Building is a project funded by the Pennsylvania DCED and local foundations. The Smart Building purchases and resells to the tenants of the former Alcoa Building shared use of a 10 Mbps Internet connection. The estimated recurring cost subsidy required until the coop achieves a breakeven status is based upon the enrollment of 50 customers per year *and* coop customer spending equivalent to Smart Building spending.

[4] The price quoted for Internet access is the price for the first (or basic) level of service. Customers expecting to use more than the basic level of service will be assigned to service levels at higher rates.

9. Organizational Plan.
Cooperatives had their origins as a form of business organization developed to satisfy needs being ignored by the for-profit sector of the economy. The unsatisfied needs are and continue to be in areas of the economy -- customers and services -- that the private sector considers to be marginal in terms of providing a sufficient return (i.e., profit) on their investments.

Cooperatives are owned and run for the explicit purpose of satisfying their members' needs. Prices are usually favorable because they're established upon the basis of the coop's costs rather than the market-based prices of for-profit service providers. Coops do not need to earn profits. Indeed, their tax-exempt status prevents them from doing so.

Cooperatives are governed by their members, in the same way stockholders govern a traditional corporation. The members elect a board of directors, which hires any necessary management and employees and authorizes contracts to perform the cooperative's functions. The business plan recommends the hiring of staff and the appointment of committees to supervise important coop activities -- Community Applications, Fundraising and Membership.

The business plan also includes draft organizational documents and discusses how the cooperative would addresses issues on grant fund eligibility and pricing for members and non-members.

10. Next Steps.
The final section of the business plan outlines the next steps to form the cooperative.

-- Fundraising sufficient for cooperative's capital and recurring costs.
-- Negotiation of transition agreement with Info Ren.
-- Approval of existing Info Ren customers to the transfer.
-- Negotiation of other contracts and hiring of personnel.
-- Incorporation and initial actions by the cooperative.
-- Approval of 501(c)(12) status from the IRS.