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Pittsburgh I-Net Working Group Proposal

prepared by Information Renaissance

Summary:

The proposal involves two major elements:

1. Free cable modems and related services (including Internet access) for 100 community groups.

2. An Extendable Institutional Network (I-Net) to 140 City, School District, library and museum buildings, with the capability to extend to nearby community sites.

Background on the Working Group

Over the past few months, a group of local community leaders, including representatives of community groups, the School District, the City, the library system and health care providers, has been discussing the communications needs of the public, in anticipation of the upcoming franchise renewal negotiations with TCI and AT&T.

In the course of those meetings, it has become clear that these groups have immediate needs for affordable, high bandwidth services and that the needs are not being met by current service providers. It is also clear that, with the growth of the Internet, the needs will expand rapidly over the longer-term.

Action is required to ensure that community's short- and long-term needs are satisfied. The group has discussed the opportunities presented by cable modems and an institutional network (I-Net) to address these needs.

On April 8, 1999, the Group met with the technical consultant hired by the City to assist in the negotiations with TCI and with members of the City's negotiating committee. The Group described its needs and a conceptual plan. The negotiating committee asked the Group to develop a more specific proposal. That proposal follows below.

Community uses beyond those of traditional I-Nets

An I-Net is a telecommunications network, provided in conjunction with a cable company's cable television network, that can serve government buildings, schools, libraries and community groups -- both for their internal communications needs and for access to the Internet. I-Nets have traditionally been built to serve large institutions

wanting to link geographically dispersed facilities. Traditional I-Net participants have included city and county governments, school districts and libraries. Community groups have usually not been included.

Institutions use I-Nets to share video programming (live and taped) for training, education and meetings, for their own data communications needs (for records transmissions, etc.) and for phone calls.

I-Nets replace lines that institutions lease from phone companies at higher prices. I-Nets are relatively inexpensive due to economies of scale. Cable companies install the I-Net cable as they install cable for their commercial systems -- saving on construction costs. Also, institutional users share the same cable infrastructure -- economizing on the amount of cable required and on operating and maintenance costs.

In the current franchise negotiations, the City and the School District have been promoting the concept of an I-Net to serve their own facilities. This proposal seeks to add the library system and museums to the I-Net and to provide access by community groups to this public network.

Why do Community Groups need access to high bandwidth services?

(1) The vital roles of community groups

Pittsburgh prides itself on the cultural strength and diversity of its 88 neighborhoods. This strength and diversity is reflected in and nurtured by an even larger number of community groups.

Community groups serve important functions. They identify community needs and goals, and they organize people and seek the financial and other resources to achieve those goals. They often represent the key point of interaction between residents and all others affecting the community -- city government, school districts, local businesses and outside developers. They perform functions that individuals cannot perform and that government should not do or does not do well.

Community groups make sure that their communities thrive -- that local businesses grow, that struggling businesses survive, and that new businesses come into their neighborhoods. They make sure that their residents have jobs, that streets and parks are maintained, and that police and fire protection, garbage pick-ups and other city services are provided promptly and efficiently. They make sure their schools provide the best education and that health care providers and social service agencies address community needs.

Community groups also supplement programs of government agencies and schools, where community needs outpace the agencies' resources. These include recreation programs for youth and senior citizens, after-school education and arts

programs, child care services, block watches and community newsletters.

(2) Community communications, the Internet and the I-Net

Much of the work of community groups boils down to communications. Community groups currently rely on face-to-face meetings, phone calls, faxes, mail, VCRs and televisions. They are relatively new to computers, email, the Internet and data networks, and they make less than effective use of what they have.

Face-to-face personal communications will always be invaluable and necessary. However, these new communications technologies can make community groups more efficient and effective.

- ⊡ Community groups can use email and websites to provide timely information to government officials and to residents.
- ⊡ Community groups can make computers and Internet access available to residents looking for information about jobs, government services, education and health care services.
- ⊡ Meetings with government officials can still be face-to-face, but residents who are unable to make the trip downtown can watch, ask questions and make comments over the Internet.
- ⊡ After-school arts and education can make use of the multi-media applications of computers and the Internet. Adults can also continue to learn.
- ⊡ Community groups can make health services more accessible by partnering with health care providers to establish local clinics that use remote medical monitoring and imaging.
- ⊡ Community groups can become more efficient, often substituting email and Internet communications for more time-consuming and expensive photo-copying, postage, overnight services, long-distance phone charges.

These activities all use telecommunications lines. These lines link groups to residents, to other institutions and to the Internet. The I-Net provides these lines inexpensively and with high bandwidth.

(3) How much "bandwidth" do community groups need?

With the growth of the Information Age, successful cities – and neighborhoods -- will increasingly be determined by their access to "bandwidth." "Bandwidth" is the amount of information a telecommunications wire can carry over a period of time – like the size of a water pipe and the amount of water it can carry.

The Internet and the rapidly expanding uses that it makes possible require a telecommunications infrastructure with increasingly large amounts of bandwidth and greater reliability. The I-Net represents the opportunity to gain this higher bandwidth at relatively less cost.

Without sufficient bandwidth, neighborhoods will lag. With high bandwidth in some areas and insufficient bandwidth in other areas, the high bandwidth areas will benefit and the others will lag. This underlies what is becoming known as the Digital Divide.

Community groups currently need less bandwidth than the traditional I-Net participants. The typical community group may use email and browse the Internet for information. Those that provide public access to the groups' computers have greater needs, which increasingly involve audio and video and which consume far more bandwidth. For perspective, this is the point the large institutions were at only three to five years ago.

As the Internet grows further, however, and as bandwidth-intensive applications become more widely available, community groups will use the new applications and the groups' needs for bandwidth will grow. Data and services will increasingly be offered in multi-media and interactive formats. Information will be provided with audio and video, in addition to the text and graphics we're used to seeing. Two-way communications will also be possible.

The specific uses that will be made of such a system cannot be fully enumerated now. The Internet is new and its ability to quickly and inexpensively transmit information to large groups of people is also new. New applications (or uses) include a broad range of activities that can be developed with desktop video conferencing capabilities. Additional uses are being developed rapidly, and their future growth is open to the imagination.

Call-in phone lines for medical information, for example, may be replaced with interactive video where patients can be examined and monitored from remote clinics and multiple patients can gain access to health-care presentations of health service agencies. Citizens get access to government records and services. Residents of school age and older can gain access to educational material and job information. Community groups can provide access for these purposes beyond the hours, the capacity and geographic proximity of libraries.

Community groups can also become content providers. Community development groups can host and distribute information about development opportunities in their neighborhoods. The groups can provide information (electronic newsletters) about community issues and can organize residents -- for recreational and social events and on issues to be advocated before government agencies. They can collect and publish neighborhood histories. They can publish the work of students in their arts and education programs.

It is very clear that future community uses of telecommunications will involve greater amounts of data and greater use of audio and video – which will require greater amounts of bandwidth. Many community groups will have a set of computers

used by the staff and an additional set available to the public to access the Internet in connection with the programs discussed above. The computers will be connected in a Local Area Network (LAN), which will be connected to the Internet with a single high-bandwidth telecommunications connection.

With the advent of these bandwidth-intensive uses, cable modems will not provide sufficient bandwidth for many community groups. Also important, cable modem users share the commercial fiber system with each other and with cable customers. As more subscribers use cable modems, they will compete with each other for bandwidth. Already, cable modem customers in some parts of the country are complaining that promised bandwidth is not always available.

To avoid a shortfall of bandwidth and the lagging of Pittsburgh's neighborhoods, the City has to plan for the future bandwidth needs of our communities.

The Community Proposal:

This proposal seeks to take advantage of the opportunity afforded by the upgrade of TCI's system to provide additional bandwidth throughout the City's neighborhoods at affordable prices. The vitality of neighborhoods and equitable access to high bandwidth facilities are the guiding principles.

From discussions with the City's technical consultant and from our own research, it appears that cable companies renewing franchise agreements typically contribute more to public purposes than the five percent franchise fee. This is usually justified under the franchising authority's power to ensure that the cable system satisfies the community's communications needs. Cable companies make these additional contributions in the forms of additional facilities and/or cash grants. From these discussions, it also appears that the magnitude of the following proposal falls within reasonable limits.

The proposal includes free cable modems to address community groups' short-term needs and the groups' inclusion in the I-Net to address their long-term needs.

(1) Free cable modems and services for immediate needs

Cable modems provide an immediate and relatively low-cost way to gain access to substantial bandwidth. Cable modems are useful for the limited uses that the groups currently make of the Internet. Accordingly, we propose that the City seek a commitment that TCI provide free cable modems and service to 100 community groups for the life of the franchise agreement.

Community groups typically use regular phone lines and one or more dial-up Internet access accounts for their bandwidth needs. Cable modems transmit information over the same coaxial and fiber lines that the cable company uses for its commercial programming services. The cable operator includes Internet access

accounts in the price of the service.

The bandwidth improves sharply from the 56 kilobits per second (kbps) available over a regular phone line. TCI currently advertises that its @Home cable modem service can provide speeds up to 2.8 megabits per second (Mbps). Web pages will load faster, and people will be able to receive and send limited audio and video. Sites will also be able to support multiple computers.

The costs to TCI are relatively modest, and the potential marketing gains are large.

The initial capital costs include the costs of the cable modems, which currently cost approximately $300.00. With volume discounts, TCI's costs would be less. TCI would also fund the installation costs, for which TCI charges approximately $100 to $175 per site.

Recurring costs would be substantially less. The company would incur incremental recurring costs only for customer questions. Operating and maintenance activities would not be directly affected, and the groups' Internet activity would likely represent only a small portion of the company's costs for Internet access. The company will forego the monthly revenues of $40.00 per month. Based on TCI's pricing, the revenue for 100 cable modems translates into $4,000.00 per month and $48,000.00 per year.

On the other hand, providing free access to cable modems at community sites represents an important marketing opportunity for TCI. The cable modems will market TCI's @Home Internet access service to a broad range of potential subscribers. For many people, access to the Internet is new. For many more people, access to the Internet through cable modems is also new. Adults using the modems will be encouraged to buy the service for use in their homes. Children using the modems will encourage their parents to buy the service. TCI will easily recoup the costs of the free modems with increased revenues from new residential subscribers.

Sites receiving cable modems would be determined through a competitive process administered by a panel of community representatives. The criteria should consider (1) the proposed community use; (2) the reach of the proposed programs; and (3) the sustainability of the program. This community panel can also evolve into a management group for the community network described below.

(2) Extendable I-Net for longer-term needs

The longer-term answer for community groups is to gain access to the dedicated bandwidth of the I-Nets that are built under the new franchise agreement. To accomplish this, we propose an Extendable I-Net that consists of the following:

An I-Net or series of I-Nets that extend fiber to the 20 buildings proposed by the

City, to the 95 buildings proposed by the School District and to the 25 libraries and museums of the Carnegie system inside the City. TCI would install fiber dedicated to the use of these institutions and terminate the fiber at the institutions' facilities. TCI would also provide collocation space and access at its four hubs.

Community groups would have the right to a network connection where the fiber terminates in the I-Net participants' buildings.

Community groups would provide their own connections to the junction points.

TCI would agree that the I-Net facilities can be used both by the I-Net participants and by connecting community groups.

The dispersion of these 140 sites throughout the City's neighborhoods would provide a broad distribution of access points for the community.

This program leverages the resources committed to the I-Net participants. It is consistent with the requirement in the school district's technology plan that school facilities be available for reasonable community use. It requires from TCI only the further commitment that the school district I-Net also be permitted for the use of community groups.

The ongoing use of the I-Nets would be managed by the I-Net participants or a separate organization. Management would entail responsibility for maintenance and repair, network management, and potentially user support. The City, the school district, and the libraries would likely manage their own systems, and they could also agree to provide these services for the benefit of the community groups. Alternatively, the groups could establish or contract with a separate organization for these purposes.

The establishment of a separate organization could help the schools and libraries to continue to take advantage of discounts available under the federal E-rate program for schools and libraries. The E-rate program, established under the Telecommunications Act of 1996, uses fees assessed on long distance phone revenues to give discounts to schools and libraries to enable them to connect to the Internet. Under current E-rate rules, schools and libraries are eligible for discounts on the costs of leased lines, internal wiring and actual services. They might not qualify for discounts on the full range of costs related to the I-Net, if they operate and maintain the network. A separate organization could help these organizations remain eligible for the discounts.

The community connections would also have to be sustainable. This means that reasonable charges would be assessed to community groups to cover the ongoing costs of the connections. This function would also be handled by the managing organization.

On a parallel track, funds will be required to design and install the community group connections -- to develop cost-effective wireline and wireless means to connect the groups to the terminating points of the fiber -- and to buy the electronics to operate the network. Funds for these purposes will be raised from foundations, from federal grant programs and from hospitals, universities and others seeking to provide community services over the I-Net. The City could also seek an additional capital contribution from TCI and AT&T for these purposes.