Exploring the Feasibility of a Strategic Alliance Approach to Telecommunications Provision in Rural Municipalities

Brenda A. van Gelder

Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Master of Science
In
Business Administration

Dr. Kent Nakamoto, Chair
Dr. Julie Ozanne
Mr. Erv Blythe

April 26, 2004
Blacksburg, VA

KEYWORDS: Telecommunications, rural communities, strategic alliance, private sector, public sector, broadband, network infrastructure

Exploring the Feasibility of a Strategic Alliance Approach to Telecommunications Provision in Rural Municipalities

Brenda A. van Gelder

ABSTRACT

Rural communities require means for obtaining access to affordable broadband infrastructure and services to meet their economic development, education, and quality of life objectives. Due to the comparatively low potential for return on investment in serving isolated rural communities, the private sector telecommunications providers have proved unwilling or unable to provide beyond the very basic services for rural communities. Private sector providers must maximize their return on investment as it is their responsibility to shareholders. Return on investment is maximized in urban areas as opposed to rural areas because the high capital cost per connection is higher in rural areas; the operating cost per connection is higher; and the revenues per connection tend to be lower. This thesis explores the feasibility of municipal and private sector provider strategic alliances as an approach to provisioning rural areas with improved telecommunications infrastructure and services. As a means of determining whether the possibility exists of a 'meeting of the minds' between municipalities and private sector telecommunications providers, a series of interviews was conducted. Common themes from the interviews were analyzed for areas of mutual interest and of polarized perspectives. In pursuing an alliance model, communities may need to consider less than the optimal technological solution in exchange for the opportunity to exemplify the ability to collaborate with a willing private sector partner. The results suggest that, while the prospects for strategic alliances as an emerging business model appear dim, opportunities do exist for rural communities and small private sector companies to find mutual interest on an exceptional basis in developing strategies for access to telecommunications infrastructure and services.

TABLE OF CONTENTS

ACKNOWLEDGEMENT

Sincere gratitude to my friend and mentor, Erv Blythe.

INTRODUCTION

Access to emerging high bandwidth advanced network and communications is critical to community and regional competitiveness and economic sustainability in today's economy. Without such access, communities are unable to attract new technology companies, or to develop a technology-literate workforce and thereby retain their young college graduates, and are unable to transition existing businesses to the new global economy. Longstanding deregulatory policy towards advanced communications services has contributed to the phenomenal growth of the Internet in consumer and business use. This phenomenal growth, however, has been uneven--mostly concentrated in the urban and high tech centers (Neidigh, 2001). The vast majority of rural communities do not have economically viable access to high bandwidth services[1]. Given current realities, the disparity in diffusion is likely to continue in the foreseeable future.

Rural communities today realize that high bandwidth telecommunications network services are essential to their economic, social, and cultural well-being and development[2]. As such, *every means* of facilitating early deployment, coupled with educational initiatives aimed at streamlining early adoption, must be employed on the part of local stakeholders if they are to ensure that their communities can compete on a statewide and national scale. This thesis explores the feasibility of one approach that rural communities might consider as a means to solving the problem of gaining access to high bandwidth

[1] "Bandwidth" is the rate at which information can be transported over a communications system. High bandwidth, in the context of this paper, is intended to mean that the communications medium can support information transfer to, and from, the connected computer in the multi megabit per second range. This is the minimal rate required for good quality visual communications, or to be a content provider on the Internet.

[2] "Links to the Future," The role of information and telecommunications in Appalachian Economic Development, Appalachian Regional Council, June 2002.

network infrastructure and services. The development of an innovative strategic alliance between one or more private sector providers and a municipality or entity representing municipalities in a region may be an alternative to municipalities taking on all of the risk and upfront capital investment required to build the infrastructure on their own.

Utilization of Broadband in Rural Areas

While the economic development and competitiveness benefits for rural communities are known and accepted, it is not as clear how individual citizens will utilize the advanced broadband services once they are made available. There is some debate and discussion at the national level about the existence of a "killer application" that will result in dramatically increased consumer demand for broadband access to the household. The idea of a killer app is grounded in the widespread belief that deployment of next generation broadband will not be funded in advance of demand, and that next generation broadband should be deployed by private industry. A report prepared by The Gartner Group in 2003 addresses what they call the "Myth of the Killer App," and states: "In our interviews, regardless of how technologically savvy the individual was, very few people could see one specific killer application that justified next generation broadband. Some very prescient people have grown so weary of the quest that they boldly assert a killer application is not a needed prerequisite to next generation broadband deployment[3]."

As the Gartner Group suggests above, a killer application is not necessary to ensure adequate and sustainable demand for broadband services to the household. Sufficient

[3] Gartner Consulting, (2003). **"**One Gigabit or Bust™Initiative — A Broadband Vision for California," commissioned report for the state of California.

demand can be developed around the following applications for rural household broadband service:

e-Commerce and e-Business is of particular importance to remote rural locations. Citizens and businesses must have the capability to be not only consumers, but also *producers* of network content and services. Affordable broadband connectivity enables citizens to become entrepreneurs, creating small businesses from their homes. It also enables innovation in network applications and services as needs are identified and new means of meeting them are discovered. While broadband is not essential for typical e-commerce uses such as online shopping, higher speed and the ability to view items in 3 dimensions certainly enhances the experience. It is expected that widespread availability of broadband for everyday use will entice users to increase the frequency with which they access the global marketplace and to expand their options for obtaining the goods and services they require.

Home medicine/tele-medicine allows patients to research their own medical concerns online prior to meeting with their doctor so they can be prepared with detailed questions about treatment options. In the near future, remote-monitoring systems will allow patients to obtain personal medical data from monitors at home, and then transmit the results to a medical facility for assessment and diagnosis. Citizens in remote rural locations will gain access to consultation by an unlimited number of globally-located medical professionals and specialists, without having to leave home.

Educational Technology uses digital technology as a means to support and enhance teaching and learning. Digital education is a trend that continues to grow throughout the U.S. as network infrastructure allows. More and more, educators are turning to digital technologies to help meet the needs of a changing student population. Advanced network applications, services, tools and digital content can extend access to education and educational resources across all sectors and regions. For example the Internet 2 K-20 initiative works to bring advanced networking tools, applications, middleware, and content into the hands of innovators, across all educational sectors in the United States.

Electronic Government (eGovernment) is a resource that citizens are beginning to request and expect. eGovernment enhances access to government information and services, streamlines billing processes and enables online payment for utility services. Perhaps most importantly, e-Government provides new ways to increase citizen participation in the democratic process.

Telecommuting is often referred to as telework, or e-work. When implemented correctly, it benefits both the employee and the company. Telework organizations take full advantage of new technologies and new ways of working to focus on the work performed rather than on the location where it is performed. There is a marked propensity towards moving to rural areas to enjoy the quality of life and telecommuting to high tech jobs for companies located in urban hubs; but this trend can only be realized if advanced broadband network service is available in the desirable living locations.

Cultural applications enable advanced collaborations between high performance networking technologies and applications in the arts and humanities. Advanced network technologies are used for documenting, archiving, and retrieving the recordings of performances such as live theatre, musical compositions, dance etc. High speed transmission, with minimal network delay, allows the type of full-motion video and accurate representation of sound that makes it feasible for musicians to collaborate from remote locations or to choreograph and stage collaborative experimental performances. This aspect of advanced networking is a way to improve the quality of life through cultural experiences which may be inaccessible to citizens in remote rural areas.

Will the Private Sector Solve the Problem?

In our free-market economy, it is often presumed that if the market demands a given service, private sector entities will naturally step in to fill the gap. Although this phenomenon is evidenced in many services enjoyed nationally today, it is not always possible. The provision of high speed broadband network access is one such case. Why won't this be something that the private sector market provides naturally? The principles of economics which follow are some of the reasons (Neidigh, 2002).

- The return on investment period is perceived as too long compared to that available in urban areas. This is due to the high capital cost per connection is higher in rural areas (due to topography and distance to be covered among other factors); the operating cost per connection is higher (due to necessity of building new facilities and hiring personnel that reside in the rural areas, among other

costs); and the revenues per connection tend to be lower (due to economic factors).

- The high capital requirements for infrastructure build-out create barriers to entry for all except the largest private sector players that have near-monopoly control of particular vertical markets, especially in rural areas.
- The profitability margin gap is enormous for urban vs. rural area services and large telecommunications companies already 'own' the most profitable markets.
- Large telecommunications territories result in political and interconnection barriers to entry for other telecommunications players.
- High risk environment (market uncertainty, competitive alternatives coming into the market every day, and regulatory uncertainty) for the technology industry creates conditions favorable to natural monopoly; high risk means high return is expected causing unnaturally high prices.
- Logistical and cost issues associated with right of way access to towers, utility poles and streets for fiber installation are overwhelming for the average private sector business. Also, it is inefficient and counter-productive for two or more competing private sector companies to attempt to install fiber in the same town or city at the same time.
- Private sector businesses typically do not have a long-term relationship and familiarity with the local rural markets. They cannot afford the time and personnel required to market services and aggregate sufficient demand to justify the large capital outlay necessary to serve those markets.

Probably the single most daunting obstacle for private sector companies and municipalities alike is the regulatory turmoil and long-term uncertainty associated with telecommunications in the U.S. Private sector companies invest millions of dollars in lobbyists to advocate for their best interests at the state and national levels[4]. Municipalities must also obtain the support and buy-in of their legislators and regulatory authorities prior to undertaking any telecommunications initiative.

What can Communities Do?

Due to the factors mentioned above, most private sector providers are not well positioned to expand into rural markets to provide high speed, broadband network services despite demand for these services. At least certainly not in a timeframe that is in the best interest of all citizens of the state and nation needing service in order to remain competitive. So, where does this leave communities?

There are two primary strategies being used by communities in the U.S. for addressing this problem. The default strategy for rural communities lacking access to advanced network services is to rely on the established telecommunications providers to make such services available as soon as they deem it possible to do so profitably. This is a passive, waiting strategy. Examples of this strategy are evident in the majority of U.S rural communities today. A second strategy being pursued by an increasing number of municipalities is to build their own infrastructure that supports advanced services as opposed to the legacy infrastructure that currently exists in their region. Examples of this

[4] An excellent and well documented treatise on the lobbying tactics of the telecommunications industry can be found in the book, The Sound of Money, by Darrell M. West and Burdett A. Loomis, 1999.

strategy include Bristol, Virginia; Palo Alto, California; 19 cities in Utah collectively investing in the UTOPIA network; and many others. (Note that an Internet search on any one of these municipal networks will uncover multiple accounts of telephone and cable companies utilizing every means at their disposal to thwart these efforts. It speaks volumes about the importance these communities place on access to affordable broadband networks that they would willingly subject themselves to such vociferous opposition.)

The disadvantages to the waiting strategy are self-evident and are often expressed in the phrase, 'being left behind'. Disadvantages of the build-your-own strategy are numerous and, as mentioned above, include expensive litigation with cable and telephone companies in order to prevent competition from municipalities in their core business. Undoubtedly, the extremely high capital investment needed to build infrastructure is a formidable obstacle (particularly in light of already-stretched municipal budgets), not to mention being able to sort through all of the regulatory, legal and policy issues associated with municipal provision of telecommunications. Lack of knowledge, the perceived need to select the "right" technology that will have the most sustained advantage, and lack of skills and experience in telecommunications technology are also major problems for municipalities considering building their own infrastructure.

The Purpose of This Study

This thesis explores the feasibility of a third strategy: an agency within the community and acting on behalf of the community works to develop a strategic alliance with a

provider in order to obtain access to advanced communications infrastructure and services. An example of this strategy is the Blacksburg Electronic Village (BEV) program in which three major entities combined to form a core public-private alliance: Virginia Tech, Bell Atlantic of Virginia (now Verizon), and the Town of Blacksburg. Virginia Tech had a substantial interest in the viability of the community and was therefore willing to act as a representative of the community interest that was able to leverage a history of credibility with the telecommunications providers. Even with a prominent university (being one of Bell Atlantic's largest customers at the time) leading the effort, forming this alliance was neither simple nor easy and required a key strategy for getting the private sector provider to the table. Initially, Bell Atlantic didn't feel that it was within their existing business models to collaborate on the communications infrastructure necessary to create the BEV. In response, Virginia Tech began to convincingly and methodically explain that the university had the capacity to either bring new partners into what Bell Atlantic considered its market space, or to implement each component on its own. Only by participating as a partner would Bell Atlantic be able to realize bottom line benefits for its business. Without participating, Bell Atlantic would have to accept seeing this initiative succeed in direct competition to its core business. In the end, Bell Atlantic came to the realization that it was in their best interest to participate and thereby develop core competencies in the emerging broadband services arena.

The alliance eventually agreed on the initial goals of

- Creating a community testing ground for the 21st century learning environment

- Creating replicable community models for low-priced access to advanced, high-bandwidth communications and for universal network and computer literacy.

Initial deployment of BEV occurred in the fall of 1993 and in 1995 more than 40% of town residents were using the Internet. The BEV example is an alliance that was based on a motivation of threat of competition as the motivating factor which brought the private sector company to the negotiating table. While a perfectly valid tactic, this paper aims to explore the possibilities of alliances based on mutual interest, public service goals (goodwill), and learning objectives.

How Would a Strategic Alliance Work?

An alliance between an agency representing the community and a private sector provider is based on an exchange of value. The community leverages its authority, assets (rights-of-way, permitting, utility poles, back-office functions), and understanding of the local market to lower the barriers and reduce risk for the provider. The municipality is able to market the potential services and obtain a committed revenue stream from large bandwidth-consuming entities ("anchor tenants"). In exchange, the provider offers its telecommunications services (building new infrastructure if required) to the community at agreed-upon prices for a limited amount of time, for example. There are an infinite number of business models that such an alliance could be built on and such are beyond the scope of this thesis. However, for the alliance to succeed, reduction of uncertainty has to be shared by both sides. That is where determination of the feasibility of this

strategy lies; to explore whether there is a possibility of a meeting of the minds between representatives of a municipality, and one or more private sector providers.

The criteria of finding a private sector partner that is able to find mutual interests with those of the municipality is central to this strategy and must take priority even over the choice of technology medium or service to be provided. It may be that simply finding a willing private sector alliance partner, even if it means trading the latest and the best technical sophistication, will prove to be the greatest challenge in this strategy. Municipalities considering pursuing this option will need to acknowledge upfront that seeking the optimal technology in an alliance partner (particularly for the first alliance) may not be the most effective way of going about it because so many other barriers to achieving that 'meeting of the minds' with a partner will have to be overcome first. An advantage to this is that municipalities can, at least for a time, sidestep the decision as to which technology they should select to implement in their community (and with it the tendency to delay action due to disagreement about which technology to invest in) and instead devote its energy to nurturing an alliance-type relationship with any and all telecommunications providers that seem to hold promise as alliance partners.

Many advantages and benefits could potentially be realized for private telecommunications service providers joining in a strategic alliance with the local municipality. While every situation is different, in most cases the municipality can bring the following to the alliance:

- Political influence on the part of the municipalities' state and local representatives who may be made more aware of the specific interests of private sector alliance partners and the essential policy and regulatory interventions required to help the alliance succeed.
- Access to capital funding alternatives that private sector companies cannot use (such as low-cost loans and bonds, Federal grants and state budget earmarks).
- Existing relationship (trust, billing, residential service) and understanding of the market to be served.
- Low or no-cost access to existing conduits and rights of way to facilitate fiber install as well as current and ongoing alternative activities that can easily accommodate fiber installation with marginal additional cost (road construction, utilities, etc.).
- Municipalities are likely to be unbiased and objective as to the type of service and vendors who can use the infrastructure (vendor- and technology-neutral). Enabling infrastructure for robust private sector-provided services is by nature community based and should be locally administrated by an entity that does not profit from or compete with the array of privately provided telecommunications services running on top of that infrastructure.
- Municipalities can serve as opinion leaders in the communities, promoting the broadband services and creating innovative ways of integrating its use into everyday community life. Rural communities and regions can become a 'captive audience' for expeditionary marketing and experimental deployment techniques for corporations otherwise struggling to keep up with urban demand and

increasing requirements to slow down and trial new concepts in service delivery to a market that is relatively unknown and invisible.

The Process for This Study

To explore the feasibility of pursuing a strategic alliance between a municipality or an entity representing a municipality or region and one or more private sector providers, a rural community was selected to be used as a case study. Key contacts were identified to represent stakeholder interests including the interests of regulatory authorities that would be required to grant approval of such an alliance. These contacts were invited to participate in the data collection portion of this study, which consisted of in-depth interviews to collect information about their perception of the issues surrounding a potential alliance formation for the purpose of provisioning broadband infrastructure and/or services to a rural community.

LITERATURE REVIEW

"Those who support a community-owned fiber-optic network admit -- we're dreamers. Big dreamers. But, we believe that big dreamers are responsible for every significant advancement in this country. Call us dreamers, but we're also doers." [5]

Background

A cursory perusal of any major news source reveals an overwhelming volume of current news stories relevant to the issue of municipal broadband telecommunications. It is a hotly debated issue at the local, regional, and national levels because of the high stakes involved for all parties concerned. A position paper put forth by the Merton Group (an investment and operations management company) in June, 2003, states that over 200 municipalities have begun the process of building out municipal broadband networks. According to the Fiber to the Home Council, as of September 2003 there are 94 communities in 26 states that are currently serving customers via fiber to the home and business.

The Merton Group's position paper entitled, "Expansion of Municipal Broadband Networks" (June, 2003) includes data collected from nearly 25,000 households in the northeastern U.S. The general trends they observed are as follows:

- 80% of residents would like access to a municipal broadband network if it does not increase their tax base

[5] Response to a Deseret News editorial that opposed the UTOPIA project, by Dennis Nordfelt and LouAnn Christensen, December 14, 2003.

- Over 50% of current cable modem users would switch to a municipal fiber network if it were available
- Over 50% of the current DSL users would also switch if a municipal fiber network were available

The Waiting Strategy

If these trends prove to be accurate for the broader population, there is certainly reason for optimism in the future financial viability of municipal broadband networks. Despite such optimism, the majority of rural communities are either unwilling or unable to undertake initiatives to build their own. An example is Humboldt County, California. The Gartner Group did a study for the Corporation for Education Network Initiatives in California (CENIC) last year, which describes the dilemma of Humboldt County:

> Humboldt County is seeing a decline in resource-based industries and is looking at technology-based industries as a tool to rebuild in education, agriculture and rural redevelopment. Healthcare is becoming a major issue with an aging population. They have and recognize the demand for more telecommunications but do not have the "middle mile"—the infrastructure to connect their northern coastal region to the rest of the world. Residents of Humboldt are a mere 21 miles away from high-speed connectivity to the rest of the world. At issue—CalTrans unanticipated requirement that SBC pay $6.40 per linear foot per one-inch conduit for right-of-way access, which adds up to about $2M. The past practice has been to use an "incremental cost recovery" model in pricing right-of-way; however, in times of budget crunches, practices change. In addition, Level3, WorldCom and AT&T have paid much higher fees in other parts of the State. The situation has gone on for over a year and is now in court where it will likely languish for more years. The CPUC has ruled it out of their

> jurisdiction. Legislators see it as a hot potato in times of budget cuts and it is too small an issue for national policy-makers. Neither SBC nor CalTrans is willing to budge on what could be a precedent-setting issue. All this time, the businesses and residents of Humboldt County wait. (Gartner, 2003)

Building it Themselves: The Retail Service Provision Model

For the (increasing) minority of rural communities that do decide to build their own affordable broadband networks, a review of existing municipal network projects reveals two general models that are typically employed: the retail service provision model, and an open access (wholesale) model that incorporates demand aggregation. It is beyond the scope of this thesis to go into detail about the advantages and disadvantages of these models. The main point to consider here is that both models are subject to vehement opposition from a number of sources (including taxpayers, regulators, legislators, and other stakeholders), but primarily from the private sector incumbent telecommunications and cable providers. It is therefore a premise of this thesis that enlisting the partnership of the private sector providers in an alliance context will not only bring the knowledge and skills that municipals lack, it may facilitate the build-out phase and help to minimize legal costs by reducing (though certainly not eliminating) some of the forces of opposition. It can also help alleviate the high upfront capital expenditures by sharing these costs in an alliance framework, perhaps including grants and subsidies that may be obtained by the municipal entity for broadband deployment.

One of the most vocal and influential advocates for municipal broadband networks is Jim Baller. He is the founder and senior principal of the Baller Herbst Law Group, P.C., a

national law practice based in Washington, DC, and Minneapolis, MN. Mr. Baller's firm represents the American Public Power Association, the National Association of Telecommunications Officers and Advisors, regional and state municipal electric associations, state municipal leagues, local governments, and public power systems across the United States on a broad range of regulatory, administrative, legislative and judicial matters involving telecommunications, cable services, Internet access, and other communications and information services. Mr. Baller was interviewed by Karl Bode, of Broadband Reports.com, in May of 2003. In that interview, Mr. Baller discussed the models of municipal broadband provision and his words are excerpted below (source: Baller.com):

> In my opinion, wholesale and retail are not necessarily inconsistent models, particularly for FTTH systems that can accommodate multiple providers. For example, the City of Bristol, VA, expected that several private-sector providers would come forward to offer a range of communications services on the City's open-access FTTH system, with the City just operating the system and filling service gaps. As it turned out, the CLEC that was going to offer telephone service went bankrupt, and no cable provider was willing to compete with the incumbent cable operator. Thus, the City had a choice – to either abandon its system and forgo the economic development and other benefits that the system was intended to provide, or expand its own retail offerings. Although the City chose the latter course, the system is still open to any private provider that wants to ride on it.[6]

[6]However, instead of leveraging the newly installed network architecture being offered by the City to reach more customers, the incumbent cable provider has been busily suing the city on the grounds that Bristol lacked an express grant of power to offer cable service and was therefore prohibited from doing so by the Dillon Rule. Judge James Jones ruled in favor of the cable company in 2002. (Baller.com)

> Also, we know that municipal retail can work -- it has for a century in the electric power area. We don't yet have proof that a wholesale model works in practice. The UTOPIA wholesale-only project has just gotten a "thumb's up" on its feasibility study. But even if UTOPIA succeeds, that does not guarantee that wholesale-only projects elsewhere, operating under different conditions, will also succeed. In my opinion, municipalities should have the right to choose for themselves whatever model they believe to be in the community's best interest.

Building it Themselves: The Wholesale, Open Access Model

The UTOPIA project mentioned above is an example of the wholesale, open access model aggregating the demand of up to 18 cities in Utah. The intent is to use municipal bond financing to build a fiber network to the home and business encompassing the participating cities and open it up for multiple competing providers to offer voice, data and video services to subscribers. UTOPIA is expected to serve nearly 250,000 households and 34,500 businesses with access speeds of 100 megabits per second, at a monthly cost of $28 per subscriber. A feasibility study of the project, independently verified by Washington, D.C.-based telecom industry analysts, found that the city fiber network will pay for itself if it achieves a 30% penetration rate by its fourth year of operations. A pilot project by Provo City, Utah – not part of the UTOPIA consortium but offering similar services on an almost identical network – signed up 40% of its residents during its *first* year (UTOPIA press release, 12/23/2003). Despite the promise demonstrated by the independent feasibility study, the UTOPIA project has been under heavy fire by the private sector, as well as by consumer groups and legislators.

A move by Qwest to kill UTOPIA in early 2004 involved campaign contributions of $50,000 and heavy lobbying against UTOPIA by the son-in-law of the Utah State Senate President. A bill openly crafted by Qwest was proposed which makes the city's financing plan illegal and was recently passed by the Senate committee; despite the fact that 18 City councils have already voted to join UTOPIA and 6 had already made financial guarantees.

The volume and tenacity of both sides of this hotly contested debate is best illustrated by a collection of headlines in Utah newspapers in February 2004:

- St. George Spectrum: "*State should keep nose out of city affairs*"
- Salt Lake Tribune: "*SLC Council hears arguments on UTOPIA net*"
- UtahPolitics.org: *"A Broadband World: The Promise of Advanced Services"*
- Salt Lake Tribune: *"Utopia's plan to develop a faster digital network slowed by Senate"*
- UtahPolitics.org: *"in Support of UTOPIA"*

  Text of Pete Ashdown's speech to the Salt Lake City Council
- Deseret News: *"Lindon OKs $308,861 for UTOPIA*"
- "Tremonton, *Midvale also approve pledges for fiber-optic system*"
- UtahPolitics.org: *"Senate Bill 66 Crafted By Qwest to Kill UTOPIA*"

The grassroots support for the UTOPIA initiative in the communities is exemplified in the organization, Utahns for Telecom Choices, comprising UTOPIA supporters; their

web site (http://www.telecompete.org/news/news.htm) has a number of UTOPIA-related links and they sponsor a pro-UTOPIA e-mail list.

The examples outlined above are only a few of the many ways in which municipalities have gone about building their own infrastructure. While these particular examples focus on fiber networks, it is not the intent of this thesis to limit the technology to fiber only. Indeed, municipalities are encouraged to consider building alliances with any and all technology providers as long as such alliance fits their mutual interests. As previously stated, in pursuing an alliance strategy municipalities need to be technology-neutral, without bias for fiber, cable, wireless, or even satellite technologies if such hold promise for reducing barriers to entry for new, advanced telecommunications services in rural areas. The discovery of a willing and trustworthy alliance partner is top priority.

Alliance Development in the Context of the Telecommunications Network Architecture

While the technical architecture of the network infrastructure is well beyond the scope of this thesis, it may be useful to illustrate the alliance development options in the context of the nuts and bolts of a network architecture. Figure 1 below illustrates a typical regional or community network infrastructure with a fiber backbone to a national point of presence, a middle mile serving the community or region, and the last mile and last 100 feet to the premise infrastructure, which may be comprised of any last-mile technology (wireless, cable, broadband over powerlines, etc.).

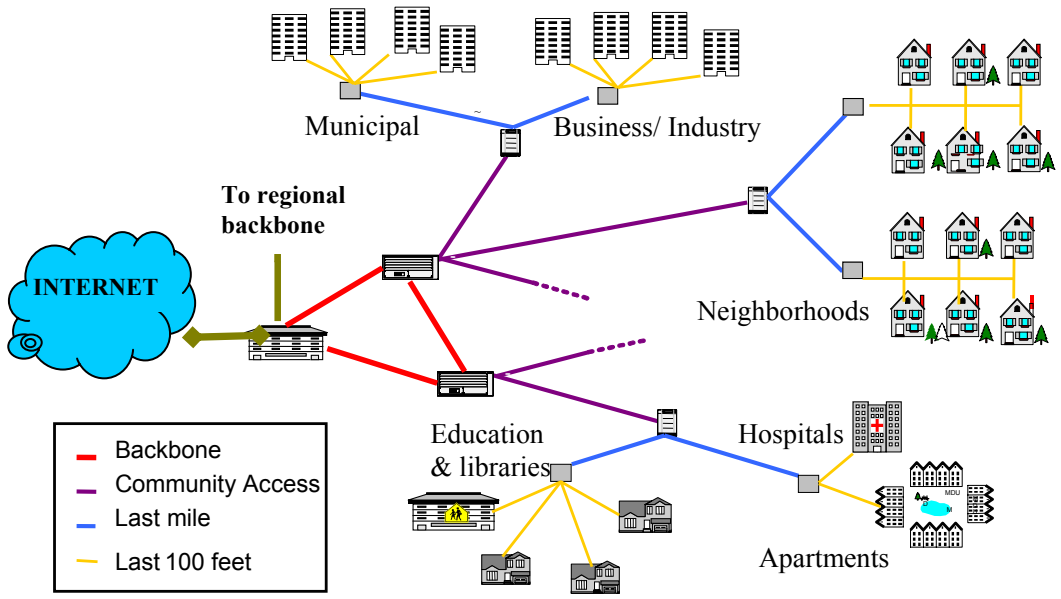

Figure 1: Representation of a Typical Regional/ Community Network Architecture

A strategic alliance could theoretically be developed with one or more private sector providers for any of the network junctures shown in the illustration above. A region could partner with a national fiber manufacturer to build the fiber backbone connecting them to a Tier 1 national network hub; or they could partner with a telephone company to provide DSL or better connectivity within the community. Likewise, they could partner with a last mile provider to deploy wireless connectivity to a neighborhood or apartment complex, broadband over powerlines to their medical facilities, and/or cable connectivity for their schools and libraries. As noted previously, while these scenarios may not represent the most advanced technological solutions, if a willing and trustworthy partner can be found and an alliance developed, it is worth pursuing. Alliances such as these present more than economic advantages and cost savings. Communities can capitalize on the visibility and national recognition that can be built around a rural community and

private sector company collaborating in an innovative model for providing low-cost access to an underserved population. The community then gains a reputation for being friendly and open to new technologies and being capable of understanding and working with the private sector collaboratively rather than competitively.

The spectrum of possible alliances could be explored on at least two dimensions: geographic (horizontal) and access media (vertical). While this is grossly oversimplified, the geographic dimension would entail considering potential partners at the community level, regional level, and national level. The vertical dimension would involve considering potential partners based on the network layers of access such as the physical media (optical fiber, wireless broadband, copper infrastructure), the electronics components that 'light' the fiber, and also includes the applications that maximize the unique characteristics of a particular media.

It is anticipated that the first opportunity to form an alliance would be to do so with a local provider that is geographically located in a community and therefore has an interest in its well-being and long-term economic viability. Such providers are likely to be for the last-mile connectivity, such as a local wireless entrepreneur or cable company. Once an alliance with this local, last-mile partner is achieved, it can then be leveraged to seek further alliances for the geographically expanding segments of the network. The assets of the municipality combined with those of the new private sector partner will increase the attractiveness of a potential alliance exponentially as each new partner is attained.

Strategic Alliance Theory

Gersony and Peters (1997) define *strategic alliance* as "a relationship between two or more firms in which resources and risks and subsequent rewards are shared." Another definition is offered by Gulati (1988) that they are "voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services". A major ongoing interest in the strategy and organizational literature is the establishment of strategic alliances as a way of managing complex and unstable environments.

Historically, strategy research suggests that firms need to seek a strategic fit between their internal characteristics (strengths and weaknesses) and their external environment (opportunities and threats). To account for the emergence of strategic alliances as well as their operation, a number of theories and models have been proposed, including marketing as exchange theory (Bagozzi, 1978), transaction cost theory (Williamson, 1991), power-dependence theory (Chisholm, 1989), the strategic behavior model (Hagedoorn, 1993), and the strategic decision-making model (Das & Teng 1998; Tyler and Steensma 1998).

The marketing as exchange theoretical perspective emerged in the early 1970s and developed a conceptualization of marketing behavior as an activity found in virtually all organizations, groups, or collectivities. It categorizes exchange into three types: restricted, generalized, and complex (Bagozzi, 1975). Restricted exchange refers to two-party reciprocal relationships which strive to maintain equality. Attempts to gain advantage at the expense of the other are minimized and any breach of equality quickly

leads to a negative reaction. Generalized exchange takes place among at least three actors who do not benefit each other directly but only indirectly. Finally, complex exchange refers to a system of mutual relationships between at least three parties. Generalized and complex exchanges are also present in relatively unconscious systems of social and economic relationships. Thus, a modern economy may experience a covert coordination of activities through exchanges that occur when many individuals, groups, and firms pursue their own self-interest. Marketing behavior is now regarded as an inherently social activity where the outcomes of exchanges depend on bargaining, negotiation, power, conflict, and the shared meanings existing between buyer and seller (Bagozzi, 1978).

According to transaction costs theory (Williamson, 1991) the success rate of strategic alliances is inversely correlated with the costs of sharing assets relative to those of full ownership. Transaction cost theory centers on transaction characteristics, static efficiency, and routine situations as explanations for why firms choose to form alliances. This theory hypothesizes that alliances form when firms are in vulnerable strategic positions either because they are competing in emergent or highly competitive industries or because they are attempting pioneering technical strategies. In other cases, alliances form when firms are in strong social positions such that they are led by large, experienced, and well-connected management teams. Some theorists argue that transaction cost theory fails to include social and strategic explanations and thus creates an impoverished view of alliance formation (Eisenhardt and Schoonhoven,1996).

A significant amount of research addresses the trust and control elements of strategic alliances. Das and Teng (1998) believe that trust and control are parallel concepts and their relationship is of a supplementary character in generating confidence. Their research sought to understand what enables alliance partners to garner enough confidence in partner cooperation so that they are not overwhelmed by the potential hazards in alliances. Partner cooperation is defined as a firm's perceived level of certainty that its partner firm will pursue mutually compatible interests in the alliance, rather than act opportunistically. If this level of certainty is never attained, or is subsequently lost, the alliance will very quickly break down.

Also essential to the long-term success of alliances is the concept of goodwill, as postulated by Dore (1983). Dore defines "goodwill" as the sentiments of friendship and the sense of diffuse personal obligation which accrue between individuals engaged in recurring contractual economic exchange. He contrasts this to the traditional use of the term in the accounting sense for explaining the difference between what a company pays when it buys another company and what it gets in the form of tangible assets. It is his view that alliances break down because of some failure of goodwill, or as the Japanese phrase is more often translated, 'lack of sincerity'.

Overall, the literature on strategic alliance theory shows that though there is considerable research on the strategic alliances among traditional firms, it is not clear if this knowledge can be applied to alliances between private sector companies and public service entities that represent municipal interests.

Forms of Alliances

A number of categorization schemes have been proposed by researchers on the nature of the relationship of the partners in a strategic alliance. A typology that seems most appropriate for the model being discussed here is that identified by Gulati and Singh (1998) which classifies alliances into three categories: joint venture, minority alliances, and contractual alliances. This theory was further developed by Ranganathan and Lertpittayapoom (2002) with regard to cooperative arrangements for promoting e-commerce activities. They utilized the three categories listed above, and based them on the degree of control and commitment in a partnership, as well as the level of expected technological contribution.

Joint ventures are combinations of the economic interests of two separate organizations that form a third, distinct firm. Profits and losses are shared, usually in accordance with equity investments. Minority alliances involve a majority investment by a large firm over that of the partner, usually a smaller firm. The third type, contractual alliances are used to transfer or interchange resources between firms with each having the least degree of control over its partner's resources. Contractual agreements can be loose or tight, depending on the levels of control and commitment and the expected technological contributions of the partners.

The three categories listed above are, perhaps, too constraining to be conducive to an alliance between a public-service, municipal agency and a private sector company. The

'minority alliance' type might be the closest fit for this model; however, it is less than ideal due, in part, to the propensity toward opportunism on the part of the larger corporation that such an alliance may entail. Rosabeth Moss Kanter (1994) has found that organizations are sometimes motivated to form unique alliances due to the risk of missing a rare opportunity. Such alliances could be built upon open-ended possibilities beyond just clear financial payoffs. An example of this is the frequent occurrence of newly privatized telecommunications businesses in Europe, Latin America, and Asia finding themselves being courted by foreign companies even though their fiscal future is uncertain. The reason foreign companies find these organizations attractive is that they offer the rare chance to acquire inside positions in new geographic markets.

Kanter goes on to point out that sometimes partners are selected more for their potential to open future doors than for immediate or financial benefits. Some executives that Ms. Kanter interviewed stated their belief that promising relationships should be nurtured for their future value, even when initial joint ventures are not very profitable. Many alliances end prematurely when they are scrutinized for quick returns.

Doz & Hamel use the term "Co-option" to describe a type of alliance involving actual or potential competitors or "complementers". They state that in the race for the largest market share, co-option is a means of reach the critical mass needed for effective competition. In the technology-driven pursuit of new markets, co-option supports the building of powerful nodal positions in emerging coalitions, particularly where standards

play a key role and network effects create strong first-mover advantages (Doz & Hamel, 1998).

It should be noted that, regardless of the choice of alliance type used for a municipal entity/ private sector partner alliance, there are many additional issues to be considered. The many implementation strategies that exist for alliance formation are outside of the scope of this thesis; however, any alliance will be required to have plans for managing trust and control, as well as the degree of structure and contractual restrictions that will be applied. A critical issue to be determined before an alliance even begins is that of an exit strategy. This is particularly important for the type of alliance being explored here, in which an entity representing a municipality must have a means of ending the alliance with a private partner in a timely and graceful fashion. There are strategies in the management literature for dealing with these issues.

Motives for Alliances

To Reduce Uncertainty

Uncertainty, defined as a state where organizations cannot control or predict some of the variables that influence them, is the key element that organizations seek to reduce through forming alliances (Thompson, 1967). In the U.S. today and for the past decade if not longer, regulatory uncertainty has been the greatest issue of concern shared by municipalities and private sector companies whose core business depends on telecommunications infrastructure and services. The FCC reviews the rules governing competitive local exchange carriers (CLECs) and Internet service providers (ISPs) every

three years. The most significant of these reviews to date resulted in the 1996 Telecommunications Act, which is a subject of much debate as to its success (or failure) at achieving its stated goal of increasing competition and access to affordable services. The decision-making and debate process of these reviews is not open to the public, causing significant uncertainty for all parties concerned who must wait until the decisions are made and the public is informed.

Since the enactment of the Telecommunications Act of 1996, technological innovation and convergence have resulted in a new set of telecommunications services that do not neatly fit within the parameters of the definitions contained in the 1996 Act. The definitions in the Telecommunications Act of 1996 and emerging technologies have created situations in which regulations apply differently to similar services based on the mode of delivery. The uneven application of regulations of comparable, competitive services has resulted in irregular, or no deployment of advanced, competitive telecommunications services in the majority of regions in the U.S.

Commercial uncertainty was identified by Steensma and Corley (2000) as a significant factor influencing strategic alliance formation in the context of technology. Commercial uncertainty arises from the ambiguity as to whether the technology will work as it is designed to work and whether the marketplace will favor associated products and processes. In the current, dynamic information technology environment, emerging information technologies can enter and sometimes exit the market in relatively quick succession. Lack of standards for use and sale of technology innovations contributes to

the uncertainty because, while firms may have free reign after immediate development of a technology innovation, standards will inevitably follow that may be inconsistent with that firm's design. The uncertainty associated with information technologies is likely to influence a firm's alliance mode in order to have greater control over the technological resources. They are likely to choose alliances that would help them spread and minimize the risks posed by commercial uncertainty.

Closely associated with commercial uncertainty is market uncertainty related to the following characteristics identified throughout the literature:

- The rate of obsolescence/ technological change
- Being able to identify and market to those who will be the early adopters
- Overall unpredictability in market trends and behaviors
- Uncertainty about the competition's behavior in terms of mergers and acquisitions
- External threats, especially those related to security and privacy

Expand Market Share and Build Critical Mass

Firms that are in highly uncertain industries such as telecommunications must find ways of countering that high uncertainty by accumulating significant market share early in the life cycle of their product or service. Alliances with local firms in emerging markets are an effective mechanism in this pursuit. This strategy is currently most frequently used in the global market, as evidenced by the American regional Bell companies that have formed alliances in newly opening economies such as Argentina, Chile, and Mexico (Doz & Hamel, 1998). Doz and Hamel go on to say "the relationship between the big foreign

partner and the more politically savvy local partner is often delicate. The balance of contributions between local and global partners generally follows this model: the local partner contributes the knowledge and insider skills needed to crack the local market; the foreign partner provides the specialized skills and other resources to service it efficiently."

Building critical mass is often another motivation for the formation of strategic alliances. An alliance with the right partner can enable a firm to become a "node" in a network, a position from which it can lead the development of new industries and command a lion's share of the profits (Doz & Hamel, 1998). In these situations, first-mover advantages are strong, provided the first mover manages to capture the opportunity. Speed is of greatest importance when network externalities leave room for a single or, at most, very few, major providers of a networked architecture or service.

Obtain Resources

Strategic management and organization literature discuss the resource-based theory, which views firms as a collection of resources that can be either produced internally or acquired from outside the firm. There are two ways to gain access to resources and capabilities from outside of a firm – merger/acquisition of another firm possessing the needed resources or through an alliance with such a firm. According to Das & Teng (1998), firms form strategic ties when they desire to obtain others' resources or to retain and develop their own resources by combining them with that of other organizations.

Das and Teng (2000) proposed two classifications of resources: property-based and knowledge-based. The distinction of the two are fairly self-explanatory; however, it suffices here to state that property-based resources do not require special knowledge and can easily be acquired from outside the firm, while knowledge-based resources require particular skill to obtain and use effectively. The relationship of these resource needs and strategic alliance formation was captured in Figure 2 below by Ranganathan and Lertpittayapoom (2002), which has been modified here to include the areas of uncertainty discussed above.

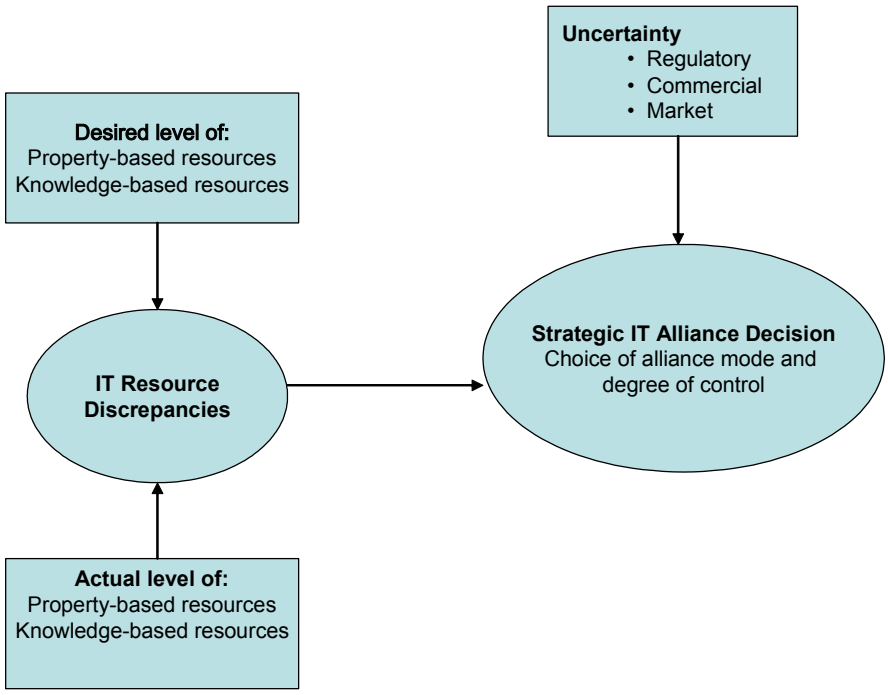

Figure 2. A framework for understanding the decision to form strategic alliances, adapted and used with permission from Ranganathan and Lertpittayapoom (2002)

Learning

As companies compete in global markets, skill deficits are soon apparent and result in local companies becoming vulnerable to competitors that have developed skills in other markets. Thus, in order to remain competitive, companies must be able to continually learn and internalize new skills. An alliance with a capable partner can offer a beneficial opportunity for a company to acquire key competencies. While the global marketplace creates the need for such collaboration, it also provides the opportunity to draw from a worldwide knowledge base.

The experiences of American and Japanese auto makers offer a good illustration of the relationship between the race for the world market and the formation of learning alliances. The auto makers from the two countries formed alliances in the 1980s , in part due to financial crises of the U.S. auto industry as a result of trying to compete with the more skilled Japanese manufacturers. Naturally, the companies anticipated measurable benefits from participating in an alliance. An interesting benefit that came about for the Japanese companies was a public relations benefit. The Japanese companies were seen as taking a cooperative stance toward U.S. industry at a time of mounting pressures for protectionism (Doz & Hamel, 1998). The fact that American workers under Japanese management performed exceptionally well, helped shift the blame for distress in the U.S. auto industry to American management and deflected anti-Japanese sentiment. Besides the public image advantages, cooperating with U.S. rivals offered the Japanese partners insights into the strategies of their competitors and understanding of the rate at which their capabilities were improving. In addition, the Japanese partners were able to learn

how to apply their management practices in the U.S., which paid major dividends when they expanded into the U.S. market with their own U.S.-based plants and American workforce.

Examples

A search of current literature involving actual implementations of strategic alliances with municipal entities and private sector providers for the provision of broadband network access to rural areas did not yield many well-established examples. What follows is a brief synopsis of two recent partnership implementations that may be relevant.

CableRunner North America and Hypower Inc. Announce Strategic Alliance

CableRunner™ NA and Hypower Inc. Team up to Provide In-Sewer Fiber Optic Deployment Solutions (Source: http://www.cablerunnerusa.com/pages/news_hypower.html)

Boca Raton, FL, June 10, 2002 – CableRunner North America, LLC, a public/private business venture part owned and operated by the City of Vienna, Austria Water and Sewer Department (Wien Kanal Abwassertechnologien GmbH), a leading fiber optic deployment company today announced a strategic alliance agreement with Hypower Inc. a leading specialty construction services company. Under the agreement, both companies will mutually benefit by providing municipalities with total solutions to deploy fiber optic network infrastructures within existing sewer and drainage systems.

Hypower will perform construction services using advanced methodologies for CableRunner NA's installations in the United States. CableRunner NA will provide product innovations, consulting, educational and support services to Hypower's client base. Additionally,

both companies will mutually explore new niche markets such as Fiber-in-Sewer networks for banks (ATMs), airports, military bases, large corporations and facilities that require having their own private communication and data centers.

"Prior to the demise of the telecom market, plans for network construction being pursued by Hypower, valued at more than $100 million were stopped. As demand for additional bandwidth returns, Hypower is poised to provide our customers with the most innovative solutions and high quality implementation for network deployment," said Bernard Paul-Hus, president of Hypower Inc. "By teaming with CableRunner NA, we are becoming one of the most advanced providers of these services in the country," he said.

"We know that municipalities are looking for the most professional, efficient, cost-effective means to implement their fiber optic networks with the least disruption possible, and CableRunner NA together with Hypower make a solid team to deliver just that," said Claudia Nettig, president and CEO, CableRunner NA.

The Blandin Foundation

The Blandin Foundation, Minnesota's largest rural-based, private philanthropy is tightly focused on the economic viability of the state's rural communities. Their "Community Economic Advantage" focuses on identifying and developing economic assets, aligning around those assets, and mobilizing broad-based collaborative efforts to help rural communities develop and take advantage of those assets.

The Foundation has a Broadband Initiative that aims to:

- Develop a high profile statewide broadband strategy

- Develop high-level community leadership engagement and public sector involvement from all levels of government
- Engage telecommunications companies in the process to foster collaborative effort
- Focus on risk mitigation and correcting the risk/reward balance

The Foundation believes that the solution to the low utilization of rural broadband services rests in developing a statewide strategy involving collaboration between community leaders and telecommunications industry representatives. The strategy would focus on public and private partnerships. Their policy and funding position is to encourage municipalities to engage the private sector telecommunications companies early in the process in a collaborative environment and to focus on risk mitigation and correcting the risk-reward balance.

According to a Foundation report, "Rural Broadband Initiative, Keeping Minnesota Communities Competitive," it is too easy to blame the lack of rural broadband access on the private sector telecommunications companies. "While social action and public confrontation are successful methods for drawing attention to a problem, these activities are counterproductive in developing solutions where multiple partners are needed in a collaborative environment. The Community Reinvestment Act of 1977 (U.S. Code, Title 12) was passed when community organizations expressed their frustration with the lack of bank investment in low-income markets. The increase in investment did not occur

until community development organizations and financial institutions sat down together to recognize their respective needs and construct meaningful strategies."

METHODOLOGY

Overview

To explore the feasibility of pursuing a strategic alliance between a municipality or an entity representing a municipality or region and one or more private sector providers, a rural community is used as a case study. Key contacts were identified to represent stakeholder interests including the interests of regulatory authorities that would be required to grant approval of such an alliance. These contacts were invited to participate in the data collection portion of this study, which consisted of in-depth interviews conducted to collect information about the issues surrounding a potential alliance formation for the purpose of provisioning broadband infrastructure and/or services to a rural community.

The stakeholders and regulatory authorities who were invited to participate include:

- Economic developers
- Community leaders from the case study community
- Telecommunications providers, at the local, regional, and state levels
- Regulatory authorities such as the SCC and legislature
- Technology director for one or more major bandwidth consuming enterprises in the area ("anchor tenants")
- Citizens from the case study community

In-Depth Interview Method

The in-depth interview method utilizes qualitative research methods to allow the investigator to sort and "winnow" the data, in order to reveal patterns of association and assumption (McCracken, 1988). A primary goal of this study is to determine whether the possibility exists for a 'meeting of the minds' between the municipal/ community stakeholders and the private sector providers to work collaboratively in bringing affordable access into a rural community. The in-depth interview method provided an opportunity to obtain the perspectives of the various stakeholders in a way that is particularly well suited to allowing the participant to take the lead and to frame the issues in ways that are relevant to them.

Respondents were eager and happy to participate in the interviews because they felt that the subject matter is of relevance and importance to them and their community/ company. They were hopeful that their perspective would be heard and perhaps validated and a number of participants expressed gratitude for the fact that someone was interested enough to hear what they had to say on the matter of broadband access for rural communities.

An interview instrument was developed that outlines the major topics of research interest and is designed to allow the respondent to 'tell their story' (see Appendix A). In-depth prompts and probes were used to explore more deeply into specific areas of interest that were first brought up by the respondent and that the investigator wished to have elaborated or broadened. Because each stakeholder interest being represented in

individual interviews is different, the questions varied depending on the specific functional interest being considered. For example, an interview with a community citizen emphasized different questions than an interview with a state regulator.

It is important to note that the identity of the case study municipality was kept confidential to everyone outside of that community. Therefore, when responding to interview questions, the members of the case study community who were interviewed answered regarding their own community. However, all other interview respondents (regulators, industry consultants, and the two former telecommunications executives) were answering about *rural communities in general* and were not talking specifically about the case study community.

The questions for every interview were structured around several broad domains that were designed to serve as open-ended prompts which would allow the respondent to tell their 'story'. The broad domains included past successes and failures with regard to helping the rural community to become more competitive; needs, weaknesses and threats being experienced by the community (or company); strengths and opportunities; and visioning possible alliance scenarios.

Method of Recruiting

An interesting challenge was presented when preparing to recruit respondents due to the professional role as Director of the eCorridors Program (a Program focused on facilitating access to affordable broadband infrastructure for rural communities). It was

important to establish the fact that this research was being conducted in my role as a graduate student and is not to be considered a 'project' of the eCorridors Program, nor would the community have access to eCorridors resources as a result of this specific research study. Effort was made in advance of contacting the case study community to avoid interacting with potential case study community respondents in my role as Director of the university program in hopes of helping to avoid confusion as to my motives for interviewing them; however, a number of them were already familiar with my professional activities. At the beginning of every interview, I identified my professional role but emphasized that I am not representing that role when conducting the interview, that I am acting purely as a graduate student conducting research for my thesis.

The potential conflicts of being known as a university program director focused on rural broadband issues and acting as a graduate student conducting my own research were documented as part of the Institutional Review Board which reviewed and approved the research and interview process prior to any interviews being conducted. Participants were selected using a judgment sample that was guided by the objective to represent the various interests of the relevant stakeholders from within (or having regulatory oversight for) the case study community.

A case study community was identified that fit the profile of a typical rural community that is economically challenged and lacks sufficient access to affordable broadband infrastructure. A core group of members of the case study community who learned of the thesis topic were extremely interested and helpful and they proposed that subjects be

drawn from their local Telecommunications Committee. This committee was part of the town planning effort, and consisted of representatives from most of the stakeholder interests being explored in this study. This method yielded a pool of respondents who are very well informed about the subject and who have a passionate interest in it, enough to volunteer their time to serve on the Committee. For this reason, their participation in the interviews provided extraordinarily competent responses, more so than one would expect from non-Telecommunications Committee participants. The Chair of the Committee sent an email, composed by the researcher, to members of the committee explaining the project and inviting them to participate. A number of people responded and the initial group of individual interviews were arranged.

It was desirable to obtain data from representatives of state and regional interests as well; particularly regulatory authorities and private sector telecommunications representatives. For these respondents, the researcher was able to identify interested subjects by making phone calls and obtaining referrals until a willing respondent was found.

Summary of Stakeholder Views Represented

There were seven respondents from the municipal side: two community leaders, one economic developer, two local anchor tenants and two citizens. In addition, there were eight respondents from other functional interests: two private sector providers, two private sector telecommunications industry consultants, two state-level telecommunications regulators, and two former national telecom company executives who now work in the public sector.

A number of attempts were made to enlist the perspective of one particular national telecom carrier, and were initially met with enthusiastic support by contacts from within the company. However, such verbal support was never followed through by the company contacts in the form of an actual agreement to be interviewed. For this reason, the interview data lacks the perspective of a current, national private sector telecommunications provider. Past experience has shown that such examples of giving verbal support and positive response that never result in action is a common strategy seen from this particular national carrier whenever rural communities are involved.

Data Analysis

Most of the interviews were tape-recorded and then transcribed. For two out of the 15 interviews, the respondents stated that they did not wish (or were not allowed) to be recorded. In those instances, hand-written notes were kept during the interview and upon leaving the interview, the researcher narrated additional comments and observations from memory in to the tape recorder for later transcription to supplement the written notes.

The transcripts of the interviews were analyzed using an iterative procedure involving two separate phases. The first phase was to read the entire text of an interview in order to get a sense of the whole perspective of the respondent. The text was then read and analyzed again several times in which each reading of the text encompassed a specific range of considerations as a means of identifying themes for each interview. A matrix was developed with cells for each respondent, the themes that emerged from their

particular interview, and notable quotes that seemed to characterize the overall perspective of the respondent.

The second phase of the analysis involved a part-to-whole intertextual review in which patterns and differences were sought across all of the interviews (Thompson, 1997). Common themes that emerged may represent areas in which mutual interests can be developed in the pursuit of an alliance type of relationship. Given the differing, and often polarized, perspectives of the various functional stakeholders, inconsistencies, contradictions and gaps were prevalent. These were of central interest as they indicate areas in which difficulty obtaining mutual interest and meeting of the minds may exist.

Limitations of this Method

While this selection of method was determined to be the best process to accomplish the research objectives for this study, it has a number of limitations. It is often perceived as useful for exploratory purposes but not necessarily for obtaining high levels of reliability. As in most research methods, there is no escaping the fact that the researcher doing the interview has their own bias and subjective view of the topics being discussed, and such bias may influence the respondent's answers in some cases. In an attempt to minimize the impact of bias, a semi-structured set of questions was used that was designed to convey a neutral stance for each topic being explored.

While the results of this research may not be generalized to the overall population as a whole, it is anticipated that the selected case study community is representative of a large

number of other rural communities and may therefore provide data that can be considered generalizable to comparable rural towns.

RESULTS

After completing both phases of the data analysis as described in the previous chapter, the following intertextual themes emerged:

- Perception of rural communities
- Need for resources
- Mismatch of interests
- Change dynamics
- Lack of a coalescing driver
- Changing climate
- Opportunities and visioning
- Obstacles to the vision

Perception of Rural Communities

Not surprisingly, the perception of rural communities on the part of the private sector respondents was negative. However, what may be surprising is that the general perception of the community members was also predominantly negative. Of particular interest is the fact that many of the examples cited by respondents from the community as being negative traits have actually proven to be positive traits in existing examples of successful municipal broadband and economic development efforts. For example, the elderly citizens of a community are often the ones who have the most interest and time to learn how to use new technologies to help them broaden their circle of contacts and obtain essential information on health and financial issues of great concern to them. (A

discussion of ways in which a number of perceived negative traits can actually be positive is included in the Conclusions.)

Consider the following quotes from citizens of the case study community:

> We had a private vendor come in and speak to us about what technology is available in the area and he mentioned that there is a hole [in this region]. Our community is the hole. *Community citizen*.
>
> Our community is a little slow. *Community citizen.*
>
> We are a community of older folks and the young adults are leaving … *Community citizen.*

The perceptions of the private sector participants was one mainly of frustration and can be summarized in these quotes:

> They are more interested in preservation than in growth. *Regional wireless company representative.*
>
> A theme park wanted to locate in [the case study community] but the county government couldn't make a deal on the land. Lowe's wanted to locate here but zoning got in the way. Pepsi also wanted to come here but couldn't work out a deal. *Locally-situated national cable company representative.*
>
> [Rural communities] are hostile to new ideas. If it is not home-grown, it's bad. They are never going to be leaders, they are always laggards, slow to adopt. *Telecommunications industry consultant*.

Need for Resources

Again, no surprise in the common theme found among all respondents that there is a lack of resources/ more resources are needed for economic development and broadband infrastructure. However, missing from the responses was acknowledgement that on a comparative basis to more urban areas, there are cost advantages in rural areas such as the

cost to deploy infrastructure may be lower due to more focused control and oversight of rights of way and easements. The cost of labor in rural areas is lower, and there is less exposure in case of failure so experimental methods of cheaper means of deployment may be attempted with less exposure than if such methods were tried in the urban market. With regard to financial resources, community respondents frequently mentioned their own lack of funds available for infrastructure; however, they did not say anything about the fact that there are actually more government dollars being allocated to rural telecommunications initiatives than there are for urban area initiatives and that this can be used to their advantage.

> We have bits and pieces but nothing is really planned out. We don't have much financial support from our governing body. *Local anchor tenant*.
>
> We recently lost one of our large manufacturing firms and that cost us 500 jobs, but even more critically, we lost $109,000 in taxes and another $165,000 in water and sewer fees. *Community leader*.
>
> We have limited funds to put into a project, we don't have access to tobacco money or coalfield money; we're left to our own resources here. *Community leader*.

Mismatch of Interests

Any attempt to create an alliance between a municipality and one or more private sector companies will quickly come up against the fundamental differences in the way these entities perceive their role with regard to the provision of telecommunications infrastructure. Appropriately, private sector companies perceive their role as one of providing network access or service in exchange for return on their investment that meets the criteria set forth by their stockholders. The public sector municipal entities rightfully perceive their role as facilitating access to affordable infrastructure and services for their

constituents, without putting an undue burden on local businesses and taxpayers. Municipalities think about creating competitive or economic advantage for citizens and businesses as a primary role. Therefore, municipalities are focused on value *to* the consumer first and foremost; whereas the private sector telecommunications companies focus on getting the most value they can *from* the consumers.

Both parties wish to maximize their investment while minimizing risk over the long-term. The resulting mismatch of interests plays out at the most fundamental level as local telecommunications company representatives interact with local community leaders in their efforts to serve the local community. Frustration on the part of all parties abounds and is evidenced in the following quotes from the interviews:

> Broadband is the most important thing in the history of the Town. We have got to move to the next generation. *Community leader*.
>
> Carriers can't help [rural communities] but are reluctant to see them go off on their own to build their own infrastructure. They have a vested interest in the market for the area but are slow to deploy there. *Former executive for a national telecom firm.*
>
> [Case study community] will be left unserved by us because they are economically challenged. *Regional wireless company representative*.
>
> Our schools need more bandwidth. *Local anchor tenant*.
>
> The political entities that we have to deal with are the counties and cities. They do not like towers [for wireless service] because they consider them to be visually obtrusive. They require that towers not be built less than 10 feet above the treeline. That makes it far away from the population center of the town and it is not economically feasible for us to serve enough customers to get a return on investment. Our company has a five year timeline for recovery of investment. *Regional wireless company representative.*

Change Dynamics

The fear of change, resistance to change, and the need for change are dominant themes from the interviews of the community and the regulators. Of interest, however, is the fact that, other than the two former national telecom executives who now work in the public sector, the private sector company representatives mentioned change only in terms of it being something that the *communities* need to do. Their responses did not indicate an interest or awareness that their own company may need to consider changing such things as the way they evaluate new market opportunities or the measures by which they determine return on investment. They seem oblivious to the idea that such change may allow their company to take full advantage of emerging opportunities in the changing climate of the telecommunications industry. This sentiment has been expressed by Andy Grove, CEO of Intel, when he wrote, "This [telecommunications] industry has proven itself incapable or unwilling to adapt to the needs of mass deployment of broadband technologies."[7]

> The problem is how to manage change. Everyone can think of reasons not to change. *Community economic developer*.
>
> Change is hard, especially for government. The economy has completely changed how we operate and interact with each other. Education is helping people to change. *Local anchor tenant*.
>
> You could go to any business here and say 'do you want a webpage?' They'd say, 'Why do I need a webpage?' If it's free they'll take it but they won't know what content to put on it. They just don't see the need, they don't think about the potential of a global market. *Local anchor tenant.*
>
> Rural communities may be too interested in preserving the old ways of doing things. The leadership are more interested in preserving their

[7] Andy Grove, in text found on Canarie Net CA*net 3 Optical Internet Program, April 16, 2002.

existing power base than in making things better. It is a threat to them.[8] *Telecommunications industry consultant.*

Lack of a Coalescing Driver

A common, and predictable theme running behind many of the comments from all the interviews was expressed in terms of a lack of direction, lack of support, and lack of leadership. What these responses are actually referring to is the lack of a coalescing driver, or champion, to lead the effort and serve as a vehicle for consensus building and generating support. Everyone seemed to understand that something must be done but no one could articulate who should take the lead and how support would be obtained. The genesis of any community infrastructure project can be expected to experience a period of purgatory in which meetings are held, recommendations are made, but nothing is implemented. While total consensus is unrealistic and unnecessary (what is necessary is critical mass) only those who manage to emerge from that morass of inaction will ever see success in a hoped-for infrastructure build.

The following comments are indicative of this issue:

> A lot of people having meetings, the same people learning the same things, but nothing comes out of it … Every little community looks out for itself, turf issues are strong. There are a lot of politics within the community. *Local anchor tenant*.

> I have tried to get something going but I can't get anything going. No one in the community sees this as important enough to do anything. At some point you just have to execute a plan and move on. *Member of the town Telecommunications Committee.*

> I've never seen a municipal organization where everyone is 100% behind a decision to invest in telecommunications or technology. *Telecommunications industry consultant*.

[8] One of the reviewers of an early draft of this thesis remarked in relation to this quote, "I find it ironic that a private sector provider said this about community leaders when this statement is a perfect description of every telecom executive I have ever interacted with." Erv Blythe, April 15, 2004.

Changing Climate

As with the lack of a coalescing driver theme, this was another case where individual respondents did not seem to have an awareness, but a holistic analysis of all of the interviews reveals that the climate for telecommunications in rural areas is indeed changing. Of particular interest here are responses from the regulators and private sector respondents:

> (*When asked if the respondent thinks the communities will be able to succeed at building their own infrastructure, from a regulatory perspective.)* There would be the political support to make it fly. You won't see the same legislative obstacles there have been in the past. Since some communities have done this the world hasn't ended – Verizon didn't go out of business. *State regulator*.

> Some things are working in favor of innovative ideas. [Company name] is not the same as it was, partly due to downsizing. Some people are from failed dot coms and other start-ups so they have a bit more creative people there and are thinking a bit differently. They realize their business model is in danger of becoming obsolete and that they have to get creative or they will be bought by someone else or broken apart with valuable components split out. They are considering VOIP, which I never thought they would consider 10 years ago. *Former national telecommunications company executive.*

Opportunities and Visioning

Despite the obstacles and challenges that seemed to dominate most respondents' comments, nearly every participant was able to identify at least one opportunity and a few were even able to envision how an alliance might be developed. This was true for all of the functional stakeholders, although the private sector respondents' visions for an alliance were typically to the effect of: if the community will build the infrastructure we specify, we'll operate it and provide the service for it.

> If a provider has infrastructure here then we could sign a non-disclosure agreement with them to find out where their infrastructure is and then we could build into the gaps and get them to cooperate with us. But in my wildest dreams what I'd like is to see the Town set up its own utilities department and make everything available to every citizen. TV by fiber optics, telephone, teaching, telecommuting, all via fiber. *Community leader.*
>
> [The case study community] does have sufficient traffic to justify additional investment in wireless infrastructure. It's the rural areas where no other competitors are serving yet so they are attractive because all of the profit of a given service can be for the one company that gets there first. *Regional wireless company representative*.
>
> A true partnership can be dynamic because if the community has their local incumbent as a partner and provides funding for local infrastructure both for local government purposes and citizens and businesses, the incumbent could manage it and provide the regional backbone. That is the type of partnership that I think ought to be allowed to move forward and should attract grant money. *State regulator*.
>
> The easiest way to solve the problem is to address new housing and real estate projects. We maybe need a national standard for new housing construction and a minimum infrastructure that should be included in all new construction. *Telecommunications industry consultant.*
>
> From a marketability standpoint, if they can say Sprint or Verizon is serving our community be we also have our own wireless project or our own fiber-to-the-home project, it gives a couple of different ways to spin it. If a carrier is looking to build in a community, obviously a streamlined permitting process, zero-cost rights of way, and other bartering processes would be helpful. *Telecommunications industry consultant*.

Obstacles to the Vision

While most respondents had no difficulty coming up with obstacles to the implementation of a vision for an alliance, they perhaps did not realize that the prevalence of narrow interpretations for the range of possibilities may represent one of the greatest obstacles. Aversion to risk is certainly another primary obstacle. Many communities that attempt to do something innovative often claim, 'We want to be the

very first to have access to this type of advanced infrastructure.' But if you attend the meetings and planning discussions, you are sure to hear those same people say, 'Who else has done this? Show me a case where this has worked so we can be sure this is a good investment.' However, a number of factors that influence the ability of those acting to implement such an alliance do comprise a formidable, but potentially surmountable set of barriers. Examples of interview results that identify those barriers is shown below.

Obstacles from within community:

> People in our community don't understand it and say that they are not ready. They don't understand why we should talk about broadband when they already have cable television in the house. *Community leader.*

> Our clients do demographic studies if they are considering putting technology into a community. If the community is 30% illiterate, 65% below poverty level, and only 10% of the population owns computers then obviously that is a big obstacle to any type of broadband deployment. *Telecommunications consultant*.

> [Case study community] current zoning prevents home businesses from hiring employees because all employees must live inside the home. We know we have to continually re-evaluate our permitting and zoning rules to be friendly to new businesses but that takes time and there is a great urgency to all of this. *Community economic developer*.

Some obstacles from outside the community that were mentioned:

> The biggest obstacle seems to be legal challenges from the embedded service providers. Bristol, VA has faced legal challenges from both the ILEC and the cable provider. *State regulator*.

> Telephone company divestiture caused communities to lose their local, personal phone company representative. After that it became harder to develop a relationship. People in one state find it hard to relate to someone in another state. Citizens and businesses in rural communities don't feel that the phone company has their best interest at heart because the headquarters is is so geographically removed. *Former national telecommunications company executive.*

A number of respondents mentioned legal challenges by incumbents as being one of the greatest challenges. It might be more accurate to state this obstacle in terms of the

tremendous political clout and lobbying power that the telecommunications industry has at its disposal to aid it in protecting its legacy infrastructure and market base. A state regulator summarized it best in the interview excerpt below:

> Some incumbents may be trying to navigate things in Washington DC to enable them to continue to achieve monopoly status in existing infrastructure without unbundling their services. They seek less regulation, preferably de-regulation. Incumbents might like to see this [regulatory agency] not have a say in protecting public interest or the FCC not have a say in the marketplace.

As will be discussed in the conclusion, this obstacle can be turned to an opportunity for rural communities if they learn to harness it for their own interests. It was evident from their interview responses that the community leaders do not understand or are not sufficiently aware of the potential leverage that communities potentially have with the support and cooperation of a number of very knowledgeable and influential politicians at the state and national levels.

NOTE: A topic that came up in some of the interviews but was not a common theme deserves mention here. One of the community leaders mentioned that they need to make the community more friendly to the "creative class". This was a reference to Richard Florida's book, The Rise of the Creative Class, and deals with the issues of tolerance and diversity as traits that make communities attractive to new economy/ knowledge workers. There was some disagreement among those who mentioned this as to whether or not there is hope for rural communities in terms of their ability to increase tolerance and diversity among their citizens. The fact that this particular case study community had at least one leader who is aware of the issue may be justification for hope that, perhaps in this case,

the community may be able to discover means by which to enhance the community's openness to diversity and tolerance of diverse lifestyles that enrich the quality of life for all.

CONCLUSIONS

"... the battle lines are being drawn between those who wish to use the power of [communications network] processes and technology to creatively destroy the existing economic and political structure and those who seek to use the new technology to preserve and protect the status quo. Recent history is on the side of creative destruction."[9]

Overview of Conclusions

The conclusions being drawn here are developed not only from the interview data, but are the result of 5 years of experience working with rural communities and private sector telecommunications companies in my role as Director of the eCorridors Program at Virginia Polytechnic Institute and State University. Such experience has instilled a bias that when communities are working to implement an innovative approach to enhancing telecommunications infrastructure, technology is rarely the binding constraint. It is mostly politics, regulatory issues, and the mismatch of interests between the public and private sectors that often bring such efforts to a standstill.

This study began by asking the question: what is the potential for a strategic alliance between a municipality and a private sector telecommunications company as an emerging business model for rural communities seeking enhanced access to network infrastructure and services? Two primary things were learned: the potential of utilizing a strategic alliance approach as a broad model for rural communities in general is not very good; however, using the model on an exceptional basis for particular strategies such as developing a first mover demonstration of new technologies, new relationships, or a new approach to expanding into rural markets, may be viable. The first conclusion is that the

[9] "Understanding the Trade Winds: The global evolution of production, consumption, and the Internet," Dickson, Peter R., 2000.

prospects for a meaningful, long-term alliance that will truly make a difference in the plight of rural communities today are dim, at least in the next 1-5 year timeframe. The large, national and regional telecommunications players are simply not interested and cannot spare the resources[10] to invest in the small market share and comparatively small return on investment that they perceive is germane to rural markets. Local representatives of these large companies are not empowered to make decisions that may benefit the communities they serve; and the decision-makers for those companies are so geographically (as well as politically and culturally) removed from rural areas that they simply do not consider their needs or the possibility of positive outcomes that may result from being the first mover to expand into those markets.[11]

That said, the fact remains that every interview respondent was willing and able to identify opportunities that exist for rural municipalities and private sector companies to work together to their mutual interest. The conclusion must be that the possibility of a 'meeting of the minds' does exist and can be cultivated. While it appears that long-term, conventional alliances with the large telecommunications players are unlikely in the near term; opportunities for innovative collaborative efforts with a number of smaller, local companies and new entrepreneurial start-ups are undoubtedly possible. The remainder of this chapter explains what elements would have to be in place for the case study community to begin building such an alliance; a discussion of the role that innovation can

[10] Currently, the telecommunications sector is suffering from a massive debt hangover. It will take years to write down this debt through traditional telecom amortization processes. More importantly, it may be many years before the markets have their faith restored in the financial viability of the telecom sector. Taken from Ca*Net4 Design Document, Canarie Net. 2002.

[11] Unlike every other information technology industry, the incumbent local exchange carriers engage in virtually no research and development. With the exception of 1999-2000, their network capital spending has remained flat for over a decade. However, their political spending has increased sharply. "The Enronization of Telecom," by David S. Isenberg, Precursor Watch, Feb. 5, 2002.

play; the potential for turning rural communities' perceived negative traits into positive tools for alliance building; and finally, some examples of opportunities that can be explored further by the case study community and other, similar rural areas.

What is Needed to Become Positioned for a Successful Alliance

Strategic alliance theory is extensive and fragmented. There are theories focused on the motives for forming alliances, the management of alliances, trust and control in alliances, types of alliances, and ranking potential partners for alliances, among others. However, before forming an alliance or even beginning to select a partner, it is helpful to know the elements that need to be in place for an entity to be sure it is positioned to engage in an alliance relationship. Using the case study community as a model, an assessment[12] of the following elements, while not exhaustive, may guide their determination as to whether or not the community is ready to consider an alliance strategy.

- Leadership team – the first thing that comes into play as the strategy for an alliance relationship begins to develop is the issue of leadership. Potential partners will need to know upfront who the decision-makers are, who is empowered to negotiate, and they will need to understand the credentials of those in the leadership role. Some private sector companies have employed the use of a "product champion" to shepherd a new product through the internal approval

[12] The community itself is certainly in the best position to assess their standing on these elements and it is not the intent to usurp that role here. However, a brief description of what has been observed to be generally the case in many rural communities that are comparable to the case study community is included here to illustrate the concept.

process to bring it to market as quickly as possible. Rural communities need to replicate this strategy in the form of an alliance champion who will push for resolution and progress as the alliance strategy is being formulated. As was evidenced in the interview data, the case study community lacks a coalescing driver for their telecommunications improvement efforts and is therefore not currently well-positioned on this alliance element. However, as will be explained in the Opportunities section, a number of good prospects for leadership exist.

- Define the alliance opportunity – this element involves understanding the objectives of an alliance and identifying the resources that are desired from a partner. As mentioned previously in this thesis, it may be inadvisable to seek a particular technology solution at the outset as this may reduce the pool of potential partners from an already very limited selection. However, broad objectives should be determined and agreed upon. Data from the interview responses include such possible objectives as more bandwidth for schools, telecommunications infrastructure to enhance government and municipal services, increased bandwidth to aid in attracting new industry to locate in the community and for workforce training, and enhanced technologies for emergency services.
- Identify and be prepared to leverage core capabilities – this element can be reworded simply as, make yourself attractive to a potential partner. To do this, the leadership team for the alliance development must know what the community has to offer and clearly understand the scope of the services you intend to perform as a part of the alliance. This element can be fulfilled by considering the motives for potential partners to enter an alliance formation that were explained in the

literature review section of this thesis and include to reduce uncertainty, expand market share, and obtain resources. As will be explained later in this chapter, the case study community has much to offer a potential alliance partner encompassing all three of these motives. The key will be for the community to know and understand that these capabilities exist and can be leveraged.

- Anticipate potential partners' needs and concerns – As explained in the literature review, trust and control are fundamental aspects of an alliance relationship. Prior to selecting a partner and beginning negotiations, the case study community should anticipate that they will need to conduct due diligence on promising potential partners, and potential partners will do the same. It would be wise to consider what the outcome of such due diligence might be and to anticipate ways in which to ensure that the result is as favorable as possible. In addition, do the necessary homework to show that you understand the market, as well as any regulatory issues that may come into play. Be prepared to justify a potential partner's investment in the community by documenting any demographics and business data that confirm the possibility of a successful and profitable outcome for the alliance. There are indications that the case study community is becoming more aware of these issues and will be able to make satisfactory progress when they are ready to develop a strategy.
- Have a broad base of support for implementing an alliance – The leadership team must feel empowered to negotiate an alliance promptly and efficiently should the opportunity arise. This certainly does not require 100% consensus among the members of the community; however, it necessitates agreement among the

primary decision-makers and larger stakeholders that the leadership team may act on behalf of the community with its support of the general objectives for an alliance. This relates again to the coalescing driver concept and is an element that to date has not been achieved by the case study community.[13]

- Exit strategy – The leadership team and those it represents will need to consider the terms under which a strategic alliance partnership would be dissolved, both for reasons of failure or success. Some options to consider are to limit the alliance to a period of time, such as five years, at which time renewal of the alliance is an option; or to identify a measure at which it is determined that success has been reached and to develop a procedure for terminating the alliance at that point. The management literature contains many examples and theories for the development of exit strategies. The important thing here is that the community be prepared not only to start an alliance relationship, but to also end it gracefully.

The Role of Innovation

Innovation is defined in the literature as the introduction of new ideas, methods, or devices, often in the form of new technologies. Innovation fuels a knowledge-based economy; it creates new industries, makes existing ones globally competitive, and drives future economic growth. According to economic estimates, more than 50 percent of the

[13] It may be noted here that the lack of a coalescing driver is perhaps the single most common missing element that can be observed in rural communities that have approached the eCorridors Program for assistance in developing a strategy for enhancing their telecommunications infrastructure.

growth in the U.S. economy since World War II, and as much as two-thirds of the U.S. economic growth during the 1990s, resulted from the introduction of new technologies.[14]

As mentioned in an earlier footnote, the incumbent local exchange carriers engage in virtually no research and development. While this is due in part to financial objectives and constraints, market factors certainly come into play as well. The nature of markets causes them to resist new ideas and products which tend to disrupt the status quo. When an innovation enters the market, it upsets the players' expectations and choices and introduces uncertainty in decision making. These "disruptive technologies," while risky to develop and launch, hold great promise for driving profits, growth, and shareholder value. It is because new technologies and business models are risky that they hold such potential to reap extraordinary rewards.

Two factors have been observed in market environments where innovation flourishes: motivation and ability.[15] Both are necessary. Private sector telecommunications companies have the ability to develop innovative technologies and methods; it is up to the municipality to create the motivation for them to do so in their community. Certainly, the case study community is capable of generating ideas to help motivate a private sector partner to work collaboratively to implement an innovative product, service, or business model. Some general ideas and areas to explore are included in the remainder of this chapter as food for thought on how to leverage the community's strengths to position it as an opportunity for innovation by the right partner.

[14] "Tracking Innovation," North Carolina Innovation Index, 2003, NC Board of Science & Technology.
[15] "The Policymaker's Dilemma: the Impact of Government Intervention on Innovation in the Telecommunications Industry," Scott D. Anthony, Erik A. Roth, and Clayton M. Christensen, 2002.

Perceived Negatives Can Be Positives

The interview data revealed a number of perceived negative traits of the case study community. While these traits can certainly pose difficulties for communities, there are also ways in which they can be manipulated to be perceived as assets when seeking to form a strategic alliance with one or more private sector telecommunications companies.

Older population

While a population consisting of a large percentage of citizens over the age of 50 may be considered a liability in terms of having a workforce that will attract new industry, it can be used as an incentive for new technology entrepreneurs to consider introducing their products and services to the community. Various marketing sources have emphasized the importance of the older demographic in terms of an attractive potential for the marketing of technology products and services. These sources indicate that between now and 2030 — the year the last of the baby boom population will be 65 — the number of Americans 65 and older will double from 35.6 million to 71.5 million. In addition, the majority of baby boomers who grew up with the technology are now becoming the fastest growing demographic for Internet use[16]. Middle-aged consumers are the wealthiest; best educated and most sophisticated of purchasers. They are the single largest consumer group in America[17]. The key to securing and retaining these growing lucrative segments is a better understanding of baby boomers and older consumers and how their behavior, buying

[16] "Staying Connected: baby boomers and the Internet," Lazer, David, Harvard Generations Policy Journal, Vol 1, Winter 2004.
[17] According to Coming of Age Incorporated, http://www.comingofage.com/

motivators and satisfaction needs change as they get older. The opportunity lies in promoting this enticing market demographic to technology companies that have developed innovative products and services that they wish to promote to the baby boom generation. They may be interested in conducting market studies, focus groups, and product research in exchange for providing early access to their new products and services, perhaps at reduced costs to encourage adoption. By conducting such early product testing in a rural community, innovative private sector companies can experience reduced risk because the community is somewhat isolated and small enough to manage closely with less concern about special pricing, product failure, etc. adversely affecting their primary markets.

The Community Lacks Broadband Access and is Perceived as Promising Inadequate Return on Investment for New Infrastructure

Clearly, a community that lacks access to broadband network infrastructure and services is at a disadvantage, economically and in other ways. However, there is a positive side and it was expressed by one of the private sector respondents when they said, "It's the rural areas where no other competitors are serving yet so they are attractive because all of the profit of a given service can be for the one company that gets there first." First mover advantages are well understood and include experience and reputational effects, increased odds of becoming the leader in a new technology or service, and early economies of scale. The market pioneers are also able to create barriers to new entrants due to factors such as buyer switching costs and customer loyalty.

The perception on the part of large telecommunications firms that rural areas promise inadequate return on investment is certainly a barrier to convincing them to provide service there. The flip side of this negative characteristic can again be turned into an advantage with respect to the opportunities to mitigate risk when preparing to launch new products or services. By utilizing an isolated, easily manageable market that is both geographically and perhaps culturally removed from the primary market base of telecommunications customers, companies can perform expeditionary marketing to ascertain the market demand of a new product or service (perhaps under worst case conditions). The term 'expeditionary marketing' describes the process of marketing a product or service ahead of any competitors and usually refers to a marketing strategy that is both exceptionally low in cost and quickly implemented.[18] It serves to help identify the unarticulated needs of customers and new potential functionalities of products. The company's risk is reduced by the ability to control the rate of new product introduction for an innovation, without adversely affecting the traditional users of its established products and services. The community can capitalize on being one of the first markets for an innovative product launch, perhaps by producing a joint press release with the company. This will further enhance the community's reputation as being technology- and business-friendly and early adopters of new technologies.

The community is "economically challenged"

As will be explained in more detail in the next section, communities fitting certain criteria of population base and economic indicators are eligible for a number of

[18] "Corporate Imagination and Expeditionary Marketing," Hamel, Gary and Prahalad, C.K., Harvard Business Review, Vol. 69, Nov. 4, July-Aug. 1991.

government grants and loan programs aimed at facilitating their efforts to remain competitive. Indeed, municipalities' various means of access to capital are an often cited 'unfair advantage' by the private sector telecommunications industry that feels it should not have to compete with municipal infrastructure builds. Municipalities are able to raise capital through municipal bonds and other publicly-backed financial instruments that are unavailable to private firms. An opportunity exists in municipalities leveraging their ability to raise capital within the community as well as obtaining financial subsidies from government sources to reduce the upfront capital costs for a private sector firm willing to build new infrastructure serving the communities needs.

Lack of a Coalescing Driver

Although an entity has not clearly emerged yet from the case study community to serve as the "champion" of a much-needed broadband initiative, a number of very good candidates exist and have already begun working collaboratively with the municipality and county to plan for upgrades in telecommunications infrastructure. These potential visionary leaders of a regional effort include the local Community College, the nearby research University, and the regional planning district commission. In the interim time as a coalescing driver emerges and begins to seek support and structure, a number of smaller community efforts led by a loose coalition of interested parties should be encouraged and supported, both financially and politically.

The Community Cannot Compete with the Political Clout of the Telecommunications Companies

Political lobbying is a key business strategy of the telecommunications industry mainly because the stakes are so high (one law has the potential to invalidate an entire business model or product line) and also because of the need to educate legislators about the implications of certain regulations on the technical implementation of new products and services. The following excerpt from a Washington Post article dated Dec. 6, 1998[19] summarizes the investment strategies of the telecommunications industry in the political arena:

> *Lobbying spending and campaign-giving levels only rose higher after the Telecommunications Act became law on Feb. 8, 1996. In addition to influencing the merger approval process, the cash has been aimed at educating legislators and regulators on the fine points of carrying out the law. Billions of dollars in revenue are in play among the telecom giants, as the Federal Communications Commission remains paralyzed over such tangled issues as revising the archaic telephone subsidy system for a newly competitive market, deciding whether Bell companies should be allowed into the long-distance business and opening local phone monopolies to competition. The nation's local, long-distance and wireless phone companies have spent $166 million on legislative and regulatory lobbying from 1996 – 1998, more than the tobacco, aerospace and gambling lobbies combined – according to an analysis conducted for The Post by the Campaign Study Group, a Springfield-based independent research firm. The study also confirms the telecommunications industry's renown as one of the top sources of congressional and presidential campaign funds. Telecom companies spent $13.5 million on contributions to candidates, political parties and political action committees (PACs) in the 1997-98 election cycle as of Oct. 14 – a 52 percent jump from the $8.9 million spent during the last nonpresidential election cycle of 1993-94.*

Armed with the knowledge that political lobbying is a key strategy of the private sector telecommunications companies, the case study community can begin working to leverage

[19] "Telecommunications Industry is More Politically Active Than Ever," written by Mike Mills and published in The Washington Post, Dec. 6, 1998.

a significant advantage that, interestingly, was not mentioned in any of the interviews. A major asset that the case study community has is the endorsement and support of two of the most knowledgeable and influential members of Congress on things related to telecommunications. Virginia Representatives to Congress, Rick Boucher and Bob Goodlatte, have been very vocal and effective advocates for telecommunications initiatives affecting the citizens of rural communities in Virginia. Together, they Chair the Congressional Internet Caucus (Boucher being one of the Founders) which is a bi-partisan group that was established in 1996 and is made up of members of the House and Senate who are working to educate their colleagues about the promise and potential of the Internet. See Appendix B for more information about the contributions of these two Representatives.

Private sector companies will quickly understand and appreciate the potential benefits to maintaining the interest and goodwill of these two outstanding political influences in the telecommunications legislative process. It is recommended that the case study community engage these resources at the very start of any initiative aimed at improving access to telecommunications in their community and keep them informed throughout.

Opportunities

A number of opportunities were discussed in the interviews, as well as in subsequent conversations with a number of knowledgeable professionals, and are shared here as food for thought. While these are sketchy and have not been reviewed for feasibility given the

specific circumstances of the case study community, it is hoped that they may spark some brainstorming and creative thinking.

- A recently announced program for funding by the U.S. Department of Agriculture may be a perfect fit for municipalities and private sector companies wishing to collaborate on a rural infrastructure build. The Rural Utilities Service has made $2.211 billion available for loans and loan guarantees for broadband Internet providers to deploy broadband Internet service to underserved communities of up to 20,000 in population. Many other such programs exist and new ones are released on a regular basis.
- A couple of interview respondents introduced the idea of greenfield deployments[20] of advanced technology infrastructure. As construction is planned for retirement communities, planned neighborhoods, road construction, and the like, small incremental investments in conduit and fiber can pay big dividends in property values, in addition to serving as incentives for the 'creative class' workforce to locate there. This can be done in cooperation with a private sector partner, or without it, as conditions allow. An advantage rural communities have here is that they can attempt experimental means of very low cost deployment methods with little risk to existing, paying customers.
- Utilizing its various means of access to capital, a municipality could take on the early risk of building out and providing service over fiber infrastructure and when it reaches a pre-determined penetration rate and has recouped its investment, sell

[20] Defined as a deployment in which the build-out of a new fiber-based access infrastructure is an integral component of the construction process and does not require mass-scale replacement or overbuild of an existing copper infrastructure.

it to a private sector company at a reasonable price for them to operate and maintain. In that sense the municipality would be acting as an early infrastructure development provider, as opposed to a competitive utility provider. This could be structured either as an open access network, on which any competing provider could lease access and provide services, or as a vendor-specific initiative (in which case care would have to be taken to ensure that the community can still have additional providers of the service and redundant network paths for security and reliability.)

- The wireless technologies being made available today represent significant opportunities for rural areas to get something up and running quickly as a means of proving demand and educating consumers about the benefits. Some of the national telecommunications players are beginning aggressive activities to push broadband wireless service for residential consumers.
- Consider joining with other communities in the region to aggregate demand and make the return on investment more attractive for the private sector providers. Former Chairman of the FCC Michael Powell recommended this in a speech he gave on October 25, 2001 in which he stated, "Government and community leaders can also attempt to organize communities and then partner with local broadband providers for bringing service. We have seen a number of very effective initiatives by local communities that aggregate demand in a manner that entices broadband providers to serve that community; for example, in Berkshire and Cape Cod, MA, and Evanston, IL.

- One creative approach is for the municipality to underwrite the cost of fiber infrastructure to every home and collect it via the water bill. This approach requires support from everyone in the community (perhaps via referendum); but would only entail an increase in water rates of up to $5 per household. The infrastructure would be built to every home but those who want to use the service would have to pay for the Ethernet connection (about $30 a month). This approach eliminates the decision as to which customers in the community to serve first, since infrastructure would be available to (and invested in by) all. A typical amortization schedule of 20 years for the fiber for approximately $1,000 upfront capital per premise would make a viable business case for such a municipal infrastructure build.

FURTHER RESEARCH

This thesis explored the feasilibility of private sector companies partnering with municipalities to expand into a new market in which the potential for maximizing return on investment may be low. It considered means by which rural municipalities might be able to create mutual interest with the private sector by leveraging positive characteristics that rural communities have and which may reduce the barriers for private sector providers by reducing their costs, mitigating risk, and possibly adding to their competitive advantage by providing an environment in which providers can demonstrate new technologies and business models in small, isolated markets. Further research is needed in the area of facilitating rural communities' ability to finance and capitalize investments in telecommunications infrastructure and services, as well as in the ownership and asset management models for such infrastructure investment.

A second primary area for further research is the chicken-egg problem of marketing broadband to consumers who do not understand it and cannot experience the benefits of it prior to actually investing in it first. Many consumers, especially in rural areas, will say that dial-up access is sufficient for their needs and it is not until they have had the opportunity to use a broadband connection in a school or library that they realize the enhanced benefits that it provides. Expeditionary marketing in rural areas holds promise for making advancements in this vexing problem.

REFERENCES

Anthony, Scott D., Roth, Erik A., Christensen, Clayton M., "The Policymaker's Dilemma: the Impact of Government Intervention on Innovation in the Telecommunications Industry, draft working paper, 2002.

Appalachian Regional Council Report, "Links to the Future, the role of information and telecommunications technology in Appalachian economic development", June 2002.

Bagozzi, Richard P., (1975). "Marketing as Exchange," *Journal of Marketing*, Vol. 39, October 1975, p. 32-39.

Bagozzi, Richard P., (1978). "Marketing as Exchange, a theory of transactions in the marketplace," *American Behavioral Scientist*, Vol. 21(4).

Chisholm, D. (1989). Coordination without hierarchy: Informal structures in multiorganizational systems. Berkeley, CA: University of California Press.

Das, T.K., Teng, Bing-Sheng, (1998). "Between trust and control: developing confidence in partner cooperation in alliances," *Academy of Management Review*, July 1998 v23 n3

Das, T.K., Teng, Bing-Sheng, (1998). "A resource based theory of strategic alliance," *Journal of Management*, 26(1): 31-61.

Dickson, Peter R., (2000). "Understanding the Trade Winds: The global evolution of production, consumption, and the Internet," Journal of Consumer Research, Vol. 27(1): 115-123.

Doz, Yves L. and Harmel, Gary, (1998). Alliance Advantage, Harvard Business School Press.

Eisenhardt, Kathleen M. and Schoonhoven, Claudia Bird, (1996). "Resource-Based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms," *Organization Science*, Vol. 7, No. 2. (Mar-Apr 1996), 136-150.

Gartner Consulting, (2003). **"**One Gigabit or Bust™Initiative — A Broadband Vision for California," commissioned report for the state of California.

Gersony, Neal and Peters, Lois, (1997). "A Strategic Alliance Typology for New Technological Ventures," *American Business Review*, Jan. 1997, pp. 63-70.

Gulati, R., (1988). "Alliance and networks". *Strategic Management Journal*, 19(4): 293-381.

Gulati, R. and Singh, H., (1998). "The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances," *The American Journal of Sociology*, 104(5): 1439-1494.

Hagedoorn, J., (1993). "Understanding the rationale of strategic technology partnering: inter-organizational modes of cooperation and sectoral differences," *Strategic Management Journal*, 14:371-385.

Hamel, Gary and Prahalad, C.K., (1991), "Corporate Imagination and Expeditionary Marketing," *Harvard Business Review*, Vol. 69, No. 4.

Hennart, J. F., (1988). "A transaction cost theory of equity joint ventures," *Strategic Management Journal*, 9:361-374.

Kanter, Rosabeth Moss, (1994). "Collaborative Advantage: the Art of Alliances," *Harvard Business Review,* Jul/August 1994, Vol. 72(4).

McCracken, Grant, (1988). "The Long Interview," Sage Publications.

Neidigh, Brenda A., (2001). "What Should be the Public Role in the Development of Advanced Network Infrastructure? An Analysis of Commonwealth of Virginia Restrictions on Municipal Telecommunications," eCorridors Working Paper #1.

Neidigh, Brenda A., (2002). "An Executive Summary of Municipal Networks Using the Palo Alto Network as a Model," unpublished eCorridors whitepaper.

Price, Linda L., Feick, Lawrence F., and Guskey, Audrey, (1995). "Everyday Market Helping Behavior," *Journal of Public Policy & Marketing*, Vol. 14(2): 255-268.

Ranganathan, C., Lertpittayapoom, N., (2002). "Towards a Conceptual Framework for Understanding Strategic Alliances in E-Commerce," Proceedings of the 35th Annual Hawaii International Conference on System Sciences, IEEE Computer Society.

Steensma, H.K. and Corley, K. G., (2000). "On the performance of technology-sourcing partnerships: The interaction between partner interdependence and technology attributes," *Academy of Management Journal*, 43(6): 1045-1067.

Thompson, Craig, J., (1997). "Interpreting Consumers: A hermeneutical framework for deriving marketing insights from the texts of consumers' consumption stories," *Journal of Marketing Research*, Vol. 34 (4) pp. 438-455.

Thompson, J.D., (1967). Organizations in Action, New York: McGraw Hill Book Company.

Tyler, B. B., and Steensma, H. K. (1998). "The effects of executives' experiences and perceptions on their assessment of potential technological alliances," *Strategic Management Journal*, 19:939-965.

West, Darrell M. and Loomis, Burdett A., The Sound of Money, New York: W.W. Norton & Company, 1999.

Williamson, O., (1991). "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives," *Administrative Science Quarterly*, 36: 261-296.)

APPENDICES

APPENDIX A

Interview Questions

INTERVIEW QUESTIONS

Question: Can you tell me about yourself and your role as (whatever their position title is, e.g., county economic developer, town committee member, etc.)

Question: Tell me about a success or a failure that your (community/ company) has experienced recently related to economic development or telecommunications.

Section 2: Broadly exploring the municipal telecommunications needs and strategies

Needs (weaknesses, threats)

1. What do you see as some of the needs for helping to make this community more competitive? (Probe: Do any of these needs involve telecommunications service or infrastructure?)

2. What are some ways that have been tried to meet those needs?

3. What obstacles has the community (company) encountered?

4. How has the business community reacted? (Probe: Have they been helpful/ not helpful? Interested/ not interested?)

5. How would you characterize the private sector's relationship with the community? How would you characterize the community's perception of your local private sector telecommunications companies?

Strengths/Opportunities

1. What does the (county, town, telecommunications committee) have in the way of resources that could be leveraged?

2. What are some anchor tenants that might utilize the infrastructure and/or services?

3. What opportunities do you anticipate may develop in the next 1-5 years? (Try to prompt them to include economic, education, health and quality of life improvement opportunities.) (Probe: How might the strengths and opportunities be affected if your locality was able to cooperate with others in the region to aggregate resources and demand?)

For interviews with private sector companies, this section would be tailored to their business in place of everywhere it says "county/community".

Visioning

1. How might you envision a partnership or alliance type of relationship with a private sector company, either large and established, or a new start-up, as a means

of (relate it back to the community needs that were mentioned).

2. Can you imagine any obstacles that might arise from the community?

3. How do you think an alliance could impact the town? (Probe: economic, education, health and quality of life?)

4. Do you have any ideas on how an alliance might be implemented? (Probe: How might your thinking and procedures change in order to implement an alliance? If so, do you think it is possible for that to happen in the next 3-5 years in your community?)

For interviews with private sector companies, this section was tailored to their business in place of everywhere it says "county/community".

Regulatory
Are you aware of any regulatory issues that would have to be resolved in order to pursue a strategic alliance with a private sector company?

Of course, when talking with a regulatory authority or an attorney, this section of questions will be expanded based on the response and the previous questions limited.

Conclusion
Is there anything that we didn't cover that you feel is important?

APPENDIX B

Facts about the contributions of Congressmen Rick Boucher and Bob Goodlatte in the telecommunications legislation affecting rural communities

Excerpted from their online websites

U.S Rep Rick Boucher is currently serving his 11th term in Virginia's 9th Congressional district.

Committees:

- House energy and Commerce Committee
- House Judiciary Committee

Sub-Committees:

- Telecommunications and the Internet
- Energy and Air Quality
- Internet and intellectual property Sub-Committee

Founder and currently Co-Chairing the House Internet Caucus started in 1996.

Notable awards:

- In 1994, Congressman Boucher received Federal Computer Week's Federal 100 Award for his work in the field of federal information technology policy
- The October 2000 issue of Network Computing magazine listed Congressman Boucher as one of the last decade's 10 most valuable contributors to the growth of information technology for the aforementioned work.
- In 2002, Congressman Boucher was nominated along with others as Politician of the Year by Wired Magazine at the Fourth Annual Wired Rave Awards.

Telecommunications and rural development initiatives:

- **The Digital Media Consumers' Rights Act:** This legislation initially introduced in 2002 and again in 2003 as HR 107 was meant to preserve the ability of consumers to use digital media in a manner that best suits them such as downloading and recording music, video, and other content so as not to violate copyright laws. It also ensures that manufacturers have the right to design and sell products that have significant lawful uses.
- **The Small Webcaster Settlement Act:** Initially introduced as the Internet Fairness Act, it was meant to protect small internet radio stations from large royalties imposed by the federal government and proposed a smaller royalty rate for webcasters. The modified version was signed into law in December of 2002.
- **The Music Online Competition Act:** Introduced in 2001 as HR 2724, the law is meant to modernize copyright laws by eliminating obstacles that impede the growth of legitimate internet companies that provide music and streaming media over the internet. The measure allowed the music to be transferred over the internet while at the same time compensating the respective artists.
- **The Rural Local Broadcast Signal Act:** An expansion of the 1988 Satellite Home Viewer Act, which enabled commercial satellite companies to begin broadcasting "local into local" service through which local broadcast stations are uplinked to the satellite and then retransmitted into the markets of their origination. The Rural Local Broadcast Signal act, introduced by Congressmen Boucher and Goodlatte, is an effort to expand the service to all 211 local television stations in the nation by authorizing 1.25 billion dollars to build more satellites which would ensure national access to all local TV stations.

- **The Internet Growth and Development Act:** The measure introduced in 1999 by Representatives Boucher and Goodlatte was designed to promote and encourage the rapid growth of the internet by keeping it free from government regulation, and to keep up competition and open consumer access. It was specifically designed to assure free choice in ISP's, encourage electronic commerce by electronic signatures, protect against spam, and speed up the deployment of high speed internet access.
- **The Trademark Cyberpiracy Prevention Act:** Legislation first introduced in 1999 by Congressmen Boucher and James Rogan to protect against cyber squatting. It protects companies from paying unnecessary legal costs for domain names taken by someone in the hopes that they can turn a profit.
- **Digital Millennium Copyright Act:** A measure that expands on the World Intellectual Property Organization Act and extends new copyright protections to the owners of the material.

U.S. Rep Bob Goodlatte represents the 6th Congressional district of Virginia.

Committees
- Chairman of the House Agriculture Committee
- Standards of Official Conduct Committee
- Republican Policy Committee
- Judiciary Committee
- Education and the Workforce Committee

Sub-Committees
-House Judiciary Subcommittee on Crime, Terrorism, and Homeland Security
-Vice Chairman of the Courts, the Internet, and Intellectual Property Subcommittee
- Subcommittee for Workforce Protections
- Subcommittee on 21st Century Competitiveness
- Livestock and Horticulture Subcommittee
-Border Security Subcommittee and on the Cybersecurity, Science, and Research & Development Subcommittee

Other
-Co-Chair of the Congressional Internet Caucus
-Chairman of the House Republican High Technology Working Group

Notable Awards:
-Yahoo! Internet Life named Bob "the most Internet friendly Member of the House of Representatives".
-Named a cyber champion by the Business Software Alliance, ranked as one of the top high-tech lawmakers in the House of Representatives
-Received a perfect score of 100 on the Information Technology Industry Council's Congressional High-Tech scorecard.

Telecommunications and rural Development initiatives:

- **Safety and Freedom through Encryption Act (SAFE), HR 695:** In the 105th Congress, Rep. Goodlatte was the lead sponsor of the bill which would guarantee all Americans the right to use any encryption product, without key escrow, and loosen export restraints. It did not pass. He reintroduced a similar bill on February 25, 1999.
- Key player in the drafting of the Digital Millennium Copyright Act in 1998, a measure that expands on the World Intellectual Property Organization Act that extends new copyright protections to the owners of the material.
- **The Rural Local Broadcast Signal Act:** An expansion of the 1988 Satellite Home Viewer Act, which enabled commercial satellite companies to begin broadcasting "local into local" service through which local broadcast stations are uplinked to the satellite and then retransmitted into the markets of their origination. The Rural Local Broadcast Signal act, introduced by Congressmen Boucher and Goodlatte, is an effort to expand the service to all 211 local television stations in the nation by authorizing 1.25 billion dollars to build more satellites which would ensure national access to all local TV stations.
- **The Internet Growth and Development Act:** The measure introduced in 1999 by Representatives Boucher and Goodlatte was designed to promote and encourage the rapid growth of the internet by keeping it free from government regulation, and to keep up competition and open consumer access. It was specifically designed to assure free choice in ISP's, encourage electronic commerce by electronic signatures, protect against spam, and speed up the deployment of high speed internet access.

Professional Bio

as of May, 2004

Brenda A. van Gelder
Email: bvgelder@vt.edu

Ms. van Gelder is the Director of the eCorridors Program (www.ecorridors.vt.edu) of Virginia Polytechnic Institute and State University in Blacksburg, Virginia. The mission of the eCorridors Program is to create competitive advantage by facilitating the deployment of advanced broadband network infrastructure and applications leveraging inter-regional connectivity for communities. During her 15 years of employment with the University, Ms. van Gelder has participated as a member of a number of national working groups focused on internet pricing issues, K-20 access to Internet2, and has directed a number of special research efforts focused on policy and regulatory issues associated with municipal telecommunications. Ms. van Gelder has made numerous presentations to key legislators, FCC officials, and community leaders regarding the economic advantages and benefits of the deployment of advanced network infrastructure leveraging public/private partnerships. She is a member of Educause' Net@Edu policy group and has written for the publication *Educause Review*.