Nine questions for communities

Presented by
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1 What is broadband, and what are we going to do with it?

Broadband may be one of the most misunderstood concepts in the United States today. I am reminded of the seven blind men trying to describe an elephant. I am interested in broadband not from a technology perspective but rather as a revitalizing tool that gives rural communities and underserved urban neighborhoods a chance to create opportunities.

I'm going to try to convince you today that with respect to broadband infrastructure, our communities really only have two options. The first choice is to continue to struggle to create jobs and opportunities using strategies that were last relevant in the nineteen eighties as the Manufacturing Economy waned. The second choice is for our communities to make modest investments in technology and telecommunications so that we can more effectively compete in the global Knowledge Economy. I see no middle road.

Although the FCC continues to define broadband as access speeds of 200 kilobits or more on both directions, this bar is set too low for future growth and economic development. South Korea's target bandwidth to the home is 155 megabits, or 775 times faster. Hong Kong recently announced plans to provide Gigabit Ethernet (GigE) fiber service to more than a million homes. Many other countries are also developing high capacity fiber and/or wireless broadband transport systems. The target, 4-5 years out, is the capacity to deliver a sustained throughput to a single home or business of 50-75 megabits/second, with 2x burst capacity, or in terms of what current systems can deliver, about 100-155 megabits/second. The reason all that capacity is needed to support entertainment and business needs. Among the uses for that bandwidth will be:

- Three channels of HDTV (12-18 megabits/channel)
- Voice and video phone service
- Radio programs, music, and movies
- Online interactive gaming, chat, small group collaboration, and Web surfing

- Business information -- business servers, video streaming, videoconferencing, work at home connections to corporate offices
- Personal and civic information -- family pictures and videos, personal videoconferencing

I will also note that the capacity has to be symmetric. That is, the upstream data capacity should be equal to the downstream data capacity. This is essential, because we all should have the ability to produce and deliver our own data streams of text, pictures, sound, and video. I reject the notion that we should be regarded as passive consumers of information; delivery systems should not be designed to limit our opportunities but rather to enhance our ability to create, sell, or share our own information.

When we talk about broadband, I think of it just like roads. Communities took on the job of building and maintaining roads about 100 years ago, when it became an issue of jobs and economic development. Throughout most of the twentieth century, roads were a vital part of a community's economic health and prosperity. Today, history repeats itself. Our communities need digital transport systems--broadband roads.

The roads of the twentieth century were maintained by the community, but it was private sector businesses that used those roads to deliver goods and services in the community. Communities built those roads because it made no sense to expect each business to build its own roads. It is no different today. Communities and businesses will have a broader range of economic opportunity with a shared digital transport system, used by businesses to provide goods and services. So we already have an excellent and time-tested framework in which to make technology investments that does not compete with the private sector, but instead enhances the ability of the private sector to create jobs and to sell goods and services.

2 What is community?

I first began asking myself this question in 1993 when I found myself in charge of a community outreach project called the Blacksburg Electronic Village. At Virginia Tech, a visionary named Bob Heterick had two crazy ideas. First, Bob imagined a time when every home would have a personal computer. Now recall that in 1993 a personal computer cost three to four thousand dollars and was still a novelty in most homes. Bob also imagined a time when every one of those computers would be connected to a worldwide information system called the Internet.

A dozen years later, Bob Heterick's vision of connected and empowered citizens, businesses, and organizations has been partly realized. But we still have much work to do, and despite all the benefits the Internet has brought us, it has also brought new challenges. This issue of community--what we think a community is--seems more important than ever now.

Christopher Alexander is for me one of the most important architects of the 20th century because he is one of the very few designers who has taken the time to think about how buildings relate to both individual and community needs. To paraphrase Christopher Alexander:

- *Even if you state clearly what a community has to do, there is still no way of finding out what the community must be like to do it.*
- *Community is a matter of intuition.*
- *Even if you state what a community has to do, it is very difficult to find out if this is* ***what the community ought to do****.*

Alexander notes that needs tend to be vague. Instead, he says, we should state needs in terms of tendencies, or the behaviors that describe how people try to fill needs. We cannot "engineer" communities, though we try continually. Writing a set of specifications about what the community must be like cannot account for the behavior of the individuals in the community. We need to develop consensus-based processes that address not only problem identification and problem solving but also we need processes that allow communities to cooperate constructively over the long term. We need processes that get us beyond crisis-driven community management.

We talk constantly about "investing" in a community, but how often do we offer citizens the opportunity to actually do that? Often, investment means getting someone or some organization outside the community to "invest", in the belief that we cannot prosper without external help. Why not rethink the notion of "community investment" to include meaningful investment by residents and citizens?

If we are serious about investing in our communities, I think communities need to realize that the one of the best strategies may be to simply do it yourselves. Fortunately, the roads of the 21st century are built of fiber. An interstate highway typically costs about a million dollars a mile. A mile of fiber, of the kind that might be used to wire up a downtown area, can cost as little as $5/foot for materials and installation if installed by the community itself. We have self-help water and sewer projects in which community members contribute equipment and sweat equity to install water systems. We should be designing self-help broadband fiber and telecommunications duct projects. I can tell you that installing telecommunications duct is much simpler than installing water systems.

If communities need funds to get started on broadband projects, why not form a non-profit telecommunications business and sell shares to the community, for $1/share? This will ensure that every man, woman, and child in the community can invest in and take ownership in this endeavor.

There is ample precedent for this kind of enterprise in the community-owned electric and telephone coops that were started in the early twentieth century because the large electric and telephone companies would not provide services to rural areas. Every community, no matter how small, has the human and financial capital to start now.

I have worked with dozens of communities, and I have never found money to be a factor in the success of a project. I am not saying that money is unimportant or unnecessary; what I am saying is that money is not what ensures success. The first step in a technology project is to forget about the technology and develop a shared vision for the community, and to develop a consensus about how to respectfully and efficiently give everyone an opportunity to be heard. Communities that take the time to develop a shared vision for the future, not about technology, but about the community itself, are usually very successful with technology projects. Communities that skip over the hard work of thinking about the future usually fail, and often fail badly.

When we talk about defining our communities, I believe the key advantage for rural communities and city neighborhoods is quality of life. In the forty years following World War II, we saw a steady emigration from rural towns and cities to the suburbs of America. But that has shifted in the past ten years. There is now a small but clear trend of people moving back to small towns and city neighborhoods. What are they looking for?

They are looking for good schools, short commutes, a real sense of place, and a real sense of belonging. The New York Times, about a year and a half ago, ran a series of stories about small communities in the Midwest that were attracting businesspeople and entrepreneurs. They found that affordable broadband, coupled with a great quality of life, were bringing people to these small towns. The most interesting thing about the stories was that the businesspeople who were moving to these small towns were basing their relocation on family needs and the availability of broadband, not on traditional business needs. Let me repeat that: it was affordable broadband and what communities offered to families that was driving economic development. Small communities and urban neighborhoods now can compete with bigger and wealthier suburbs more easily, and with affordable broadband, have a built in advantage that can't be easily duplicated.

Defining community, defining what it is we think we are trying to save, is critically important. We must take the time to define our communities, we must take the time to think about the future of our communities (not the past), we must take the time to develop a consensus decision-making process that gives everyone an opportunity to speak up, we must take the time to nurture leaders, and we must take the time to make thoughtful decisions. I can assure you that if you do not do these things, any technology you buy will be wasted.

3 Are we ready for the global Knowledge Economy?

The Internet has created a global economy based on the free flow of information. Communities are no longer competing for jobs with the next county or an adjacent state, but with other countries. Many economic development efforts in this country remained firmly devoted to forty year old Manufacturing Economy strategies. Rick Smyre, President of Communities of the Future and a faculty member of the National Economic Development Institute, is fond of reminding his audiences that, "Industrial recruitment as a primary economic development strategy peaked in 1983." In other words, it has been more than twenty years since simply trying to attract jobs and businesses from outside a region has worked well for most areas.

There are a variety of job creation statistics available, but data from all of them point to the fact that 75% to 90% of all new jobs are being created by small businesses (25 employees or less). This means that if a region's economic development strategy is focused solely on recruiting new companies to the region, as much as 90% of the potential jobs creation is being missed.

The traditional measure of economic development and jobs growth has been the Payroll Survey. The growing problem with the Payroll Survey is that it measures Manufacturing Economy growth (or lack of it). It measures only payroll changes. But in the Knowledge Economy, more and more workers are self-employed and/or have multiple streams of income, and these new businesspeople and entrepreneurs have little or no payroll. Many of these self-employed workers and business owners, if they expand, hire other self-employed workers on a project by project basis. This means that while they are providing employment for others, they are not adding to the Payroll Survey.

The Household Survey tries to take these other employment measures into account. Contrast the results of the two surveys in July of 2004. The Payroll Survey reported an anemic 62,000 jobs added to the economy. The Household Survey reported a stunning 629,000 jobs added to the economy.

For communities, it is critical to understand the difference between the two and to adjust economic development strategies appropriately. These numbers are nonpartisan statistics gathered by the Department of Labor. If the success of your economic development program is measured by the local growth of payroll jobs, you are missing (potentially) some 90% of the new jobs being created, based on the July numbers.

This is an important issue for communities trying to measure the impact of new and diversified economic development efforts, like investments in getting affordable broadband and small business training and development. If economic developers are being rewarded for increases in payroll jobs, the community is losing out--that's not where the growth is.

Not only that, a factory floor payroll job is not necessarily equal to a self-employed job. A prosperous microenterprise owner with a gross business income of $150,000/year and take home pay of half that has a much larger impact on the economic health of the community than a $12/hour full time hourly worker, and it's probably much more than just a simple 3x factor. Gary Larrowe, an economic developer from Carroll County , Virginia, thinks that the impact of a single self-employed professional in the community might be worth as much as ten shop floor jobs, because of the indirect effect. Self-employed professionals are spending some of their business income on local businesses--attorneys, accountants, copy services, and other professionals in the community, which supports those businesses and helps them grow.

Are your economic developers shifting course and reallocating resources to better foster growth locally of self-employed workers, microenterprise businesses, and small business? Do your economic development strategies now include marketing toward self-employed entrepreneurs looking for a good place for their families to live? If not, your region is at a major disadvantage.

Outsourcing of U.S. jobs to other countries, depending upon who you believe, is wrecking the country or no big deal. Based on data developed by business experts like Peter Drucker, who says three U.S. jobs are created for everyone that is outsourced, outsourcing does appear to be a major concern as a national issue. As a local issue, if your area has been losing jobs, it's certainly a major concern, hence the confusion about outsourcing--it is a matter of geography. Nationally, we are creating jobs. But in some localities, real jobs are being lost and workers and their families are affected materially.

The real question is what to do about it. Insourcing is looking through the other end of the telescope. Instead of bemoaning the loss of jobs, communities should be studying the potential of insourcing, or the jobs and companies that are coming to the United States. If Drucker is right that 3 jobs are being created for every job that leaves, then the real opportunity is to figure out to be attractive to those international companies coming to the United States.

The Organization for International Investment has compiled state by state statistics on insourcing. In Illinois, 268,400 jobs that represent a 39% increase were insourced over the past five years. In New Hampshire, the state gained 38,400 workers with a 43% increase over five years. In Virginia for example, in 2004, there were 146,000 insourced jobs, which is a 25% increase over the past five years.

How does a community get insourced jobs? International companies are relying heavily on the Web to do their research because they cannot afford the high cost of travel to every prospective community. Local community, government, regional, and economic development Web sites need to be attractive, vibrant, well-designed, and professional. They need to tell a good story. One suggestion: create "Welcome" pages in some of the dominant languages of trade (Spanish, French, Ger-

man, Japanese, and Chinese) would be a good start. It's not expensive, and it will project that your community embraces the global economy.

To successfully adjust to this new climate, communities need a diversified economic and entrepreneurship development strategy and the job descriptions and reward structure for local economic developers must be adjusted accordingly to reward effort directed toward the new goals. A Knowledge Economy approach to economic and entrepreneurship development should include:

- Continued efforts on industrial recruitment of "big" companies of 50-100+ employees (20% of total effort).
- Growth of existing businesses in the region, especially those with 25 employees or less (40% of total effort).
- Development of new business startups from entrepreneurs already located within the region (25% of total effort).
- Insourcing recruitment of international companies interested in establishing a local presence in the United States (15% of total effort).
- A comprehensive Web-based marketing strategy that promotes and encourages rich local content across a whole set of community Web sites.

4 What is the network?

In Blacksburg, a very common refrain is "I love my email, and I hate my computer." This tells me that what is most important to people is the ability to communicate with others, and that they don't really care about the stuff. A key problem in communities is understanding exactly what a network is. Networks are not just "stuff." Some community projects have faltered because of an overemphasis on infrastructure and a lack of attention to other key success factors. The diagram to the right illustrates the seven key areas that require at-

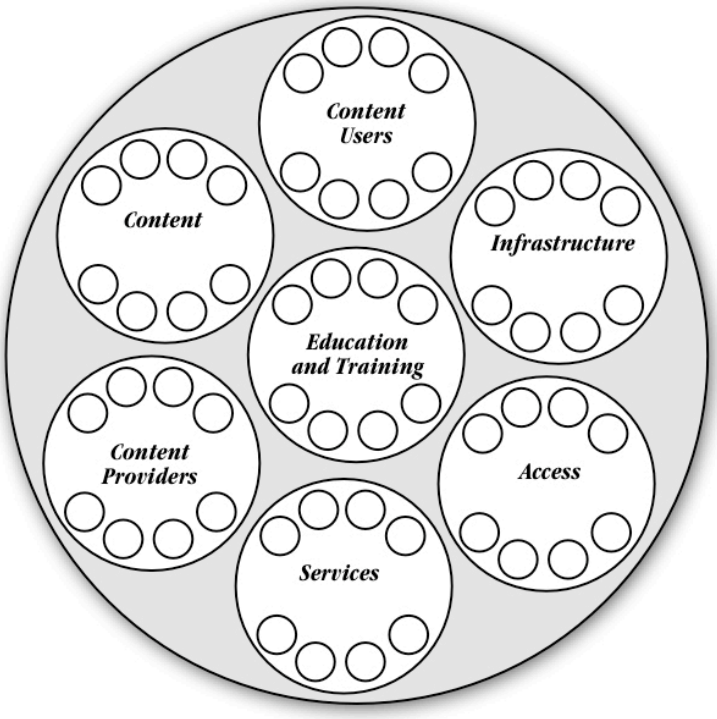

Figure One: The Seven Key Success Factors for Community Broadband

tention as part of a successful broadband effort.

Education and Training. A necessary requirement for any community broadband initiative is a parallel education and training effort. If citizens, businesspeople, and local leaders do not understand the economic development benefits of broadband, do not know how to use broadband to expand jobs and work opportunities, and do not know how to use broadband to support community groups and civic affairs, the infrastructure investment will be underutilized.

Infrastructure. Broadband is the digital transportation system of the 21st century and a primary engine of local economic development, just as highways, water, and sewer systems were drivers of the Manufacturing Economy fifty years ago.

Access. In the "old," twentieth century, analog model of telecommunications, infrastructure, access, and service were bundled together. For telephony, this meant that the cable to the home was the infrastructure, access was connecting the cable to the telephone company switch, and the service was dial tone. There was no way to decouple or separate those three--they were bound together by the old technology. The Internet model of communications makes infrastructure, access, and services completely separable. This creates more competition and drives down costs.

Services. Services deliver content (e.g. email, the Web, mailing lists, etc.). Services are ultimately what people and businesses want; no one really cares about the infrastructure or access. So attracting service providers to a community or region is critical to the success of infrastructure investments--spending money on fiber or wireless but not having the right service providers will minimize the impact of the investments.

Content. Content can come from a variety of sources: for profit companies (e.g. selling music, movie downloads) and local providers like local government (a GIS system with a Web interface), community groups, or individuals blogging or sharing hobby interests. The community infrastructure and access to that network should be structured to attract and encourage the development and distribution of innovative and varied content.

Content Users and Content Providers. The new Internet-based information distribution system allows content providers and content users to be one and the same. A local blogger creates content and publishes it as a content provider at one moment, and a moment later has seamlessly shifted roles to content user as he or she access content on the Web. Even email is a two way content creator/content user model as someone corresponds with others.

All these components are necessary to have a useful network, but note that infrastructure, the "stuff" of networks, is just one part of a larger system that starts and ends with people communicating with other people.

5 What is a community information utility and why do you want one?

Community networks (also referred to as community information utilities, or CIU) are locally based, nonprofit community ventures that provides technology services and training to the community, may own and manage the community telecom infrastructure, and serve as a technology advocate and advisor on broadband issues. A community information utility has a valuable, long term role to play in the community as a trusted provider of technology services that is vested in the community. Free services like Yahoo! and Google are often used to support community and civic groups, but in return for the free services, individuals and groups are required to share extensive personal information. This is an acute issue when a youth group is using these commercial, ad-supported services and children not only have to provide personal information but may be exposed to inappropriate advertising. Some of the roles of CIUs are:

- Create and maintain public spaces in cyberspace. We need community spaces in cyberspace just as we have public spaces in our physical communities. Community networks are needed to serve as a trusted local provider of technology services for community and civic use, where privacy is protected and are youth have safe spaces to use services like chat and email.

- A community information utility provides access to education and training resources to help train and retrain workers for the Knowledge Economy. Local leaders, school teachers, librarians, businesspeople, young people, and ordinary citizens all need training, now and well into the future, because the technology continues to evolve and develop.

- Community-based information technology consulting and information resource. Community networks can play an important role by providing local government, schools, and non-profits with high quality technical support, system administration, and information services like email. It makes no sense at all to have a half dozen organizations in the community all trying to run a mail server.

- A community information utility is an advocate for open access infrastructure and services.

- The CIU helps increase demand for commercial products and services, especially local products and services.

- The CIU acts as brokers for access by aggregating demand and encouraging public/private partnerships.

- It provides community Web portals to organize and to improve access to local content.

- The CIU provides business incubator services and training to entrepreneurs and microbusinesses.

- The CIU creates a "connected" community with services to youth groups, churches, sports clubs, and civic/ nonprofit groups, and provides a safe and secure place for online youth activities and a neutral environment to discuss community issues.

6 What the components of an essential public telecommunications infrastructure?

There are several affordable system components that fit together to form a modern, communitywide broadband network. We already have a national Internet backbone (the equivalent of interstate highways) that works reasonably well, so most broadband investment is needed at the local and regional, inter-community level. Key areas of investment include:

Community colocation. Community-managed public colo space is needed to lower the cost to service providers of entering local markets, and to provide an affordable, local interexchange point. It is inefficient and costly to require each provider to provision colo space; the community colo lowers the cost to offer service in a community. The community colo solves a persistent chicken and egg problem - where to terminate fiber, wireless, and community duct systems. A typical colo facility for a modest community may be 150 to 500 square feet of space with good air conditioning, backup power generator, raised floors, and controlled access.

Duct, fiber, and wireless systems. These systems, especially duct and antenna sites, are the equivalent of roads. These facilities are needed in communities to improve network performance, enable next generation applications and uses, and to lower the cost of offering service. A somewhat religious argument has developed over the issue of fiber versus wireless. Wireless vendors will cheerfully tell a community that fiber is too expensive, and that wireless systems are the only way to go. Fiber design and engineering firms will swear that the bandwidth limitations and interference issues with wireless systems make them a poor choice. Most communities will want and need both. To deliver high bandwidth applications like High Definition TV to entire neighborhoods, fiber will be required. But at the same time, we will all have wireless, multifunction devices that will include voice telephone services, Web access, text messaging, and other data-enabled services. Choosing fiber or wireless is based on current and near term bandwidth needs, topography and terrain, the funds available, and economic development goals. All vendor claims should be considered carefully, and community needs and requirements should come first. Vendors often offer "free" design services, but these come at the price of a single vendor solution that may or may not meet community needs. A vendor-supplied "free" design will rarely include less expensive alternatives available from competitors.

NSAPs. Neighborhood Service Access Points provide a place in neighborhoods to locate network equipment close to customers. These are typically raised cabinets or small huts adjacent to right of way.

MSAP. The Multimedia Services Access Point is a community level data exchange point that improves network performance within a community and lowers costs for access providers.

RNAP. The Regional Network Access Point improves regional, intercommunity network performance, helps provide alternate data paths (important to business users), and lowers costs for access providers.

7 How do we ensure that our communities can prosper?

When we talk about communities and prosperity, I think we should be aiming for communities where everyone can enjoy an abundant and healthy life. Max Gail, the founder of the wonderful concept of the LAP, or Local Access Place, talks about the idea of communities that are committed to abundance--the idea that communities can come together with a shared vision, a vision of balance and mutual respect, and that by doing so, there is enough to meet the basic needs of everyone in the community.

In the 20th century, the prosperity of communities was defined largely by the proximity of an interstate highway to the community. Communities near interstates prospered, and those too far away withered. Today we are faced with a nearly identical situation. Communities with affordable broadband access within the community and with good connections to regional and national networks will prosper. Communities that lack that access will wither.

I do not believe communities can wait for the private sector or state and federal legislators to do this job for them. Instead, you must do exactly what our leaders did seventy years ago when it was impossible to get telephone and electric service in rural areas. You must do it yourself. Municipal electric utilities, telephone coops, and electric coops wired rural America in the 30s and 40s. It's time to roll up our sleeves and do it again.

And you cannot afford to wait, because both here and in other countries, there are communities that are not waiting. Loma Linda, California just passed an ordinance requiring all new residential developments to install fiber to the home and turn it over the town when the neighborhood is complete, just the way developers install water and sewer systems and turn it over to the community. Cedar Falls, Iowa has had a municipal fiber system in place for six years and has seen new construction double in that time. Ireland has built a fiber ring that connects 123 towns and cities in the country, and it is no coincidence that Ireland is the only country in Europe with robust growth in jobs and income. South Korea is now the most technological savvy country in the world, and American companies now go there to test new products first. In terms of broadband use, the United States ranks only 13th, behind places like Norway and Singapore. Other countries and other communities are not waiting for prosperity to come calling, they are creating it.

Any community in America that has the will can begin building an all fiber, community-owned network. You may have to start with one building, or one block of downtown, but I can assure you that it will spread as fast as you can install the fiber.

We can ensure the prosperity of our communities by making investments that make sense in the context of the global Knowledge Economy, rather than continuing to do what worked well forty years ago. We can ensure the prosperity of our communities by encouraging our leaders to be open to change, rather than resistant to it. We can ensure the prosperity of our communities by outlawing the phrase, "We've never done that before," which has stopped more projects that I can count. We can ensure the prosperity of our communities by not complaining about the loss of young people and instead doing things that make the community attractive to young people, and I can assure you that talking about how great things used to be is not attractive to young people.

I often get asked by communities to provide some guarantee that investments in telecommunications will be risk free. I cannot do that. But I can guarantee that the far riskier choice is to not invest. Communities worry about risk, about buying the wrong thing, about whether they should invest in fiber or in wireless. None of those issues are nearly as risky as doing nothing. I cannot guarantee that a community's investments in telecommunications will have the desired impact, but I can with a very high degree of certainty be confident that if communities do not invest in the future, they will be left behind, just as communities that were bypassed by interstate highways withered and died.

8 How should communities get started?

Stop worrying about money. As I mentioned earlier, money is not a determinant of success. Money, or the lack of it, is an excuse for doing nothing. If someone says there is no money for broadband investments, or if they say "there is nothing in the budget," what they really mean is that they would prefer to do nothing. If you can identify a clear vision for the community, money and opportunities will follow.

Acquire competent advice. Two of the biggest mistakes I see communities make is relying too much on local technology advisors and relying too much on free advice from vendors. In the first case, local IT people rarely have any experience designing or managing communitywide networks, and I can tell you that a communitywide network has little in common with a K12 school or hospital network. In the second case, free advice from vendors is extremely risky, since their motivation is to sell equipment, not to ensure that your investments meet community goals.

Plan lightly. We now live in a complex and interconnected world where it is impossible to predict what is likely to happen years in advance. When talking about the future of communities, traditional strategic planning does not work. A tech-

nology master plan must talk about goals and objectives that tie investments to desirable community outcomes, not what brand of equipment to buy.

Distinguish between what you can do and what you want to do. This sounds simple, but I see communities fail here almost daily. What you want to do is almost always more interesting, but it is often unobtainable in the short term. What you want to do helps define long term goals and objectives, but to achieve forward motion, you must step back and design plans based on what you can do today or over the next several months. Do what you can do ***first***. Many communities drive projects into the ground by skipping over small things that are easily achievable in favor of big things that are often impossible in the short term.

Don't worry about the stuff. Instead, worry about what you are going to do with the stuff. Do not let local IT experts drive these projects; they love stuff, but they are rarely able to tie IT investments to community goals and needs. One well intentioned IT expert who continually steers discussions to arcane technical matters can bring a project to a sad end.

Do not let committees kill enthusiasm. Poorly run committees and task forces are the bane of community development efforts. A successful technology planning effort will have a strong leader in charge that is a good listener but also believes in sticking to an agenda, stopping discussion after an appropriate period of time, delegating responsibility, and holding people and sub-committees accountable.

Partner with the eager. Too many projects believe success is guaranteed by partnering with the rich and powerful in the community. Unfortunately, the Internet often threatens entrenched interests and institutions. Champions for a "connected" futures-oriented community emerge from unlikely sources. Look for people and groups eager to get things done.

9 Are we telling our stories?

I will close with one final thought--each of you should tell your own story. And I know that we all have stories to tell. We can tell stories of the work that we do, we can tell stories about our lives, our problems, and our successes. We can tell stories about our hobbies, our passions, and our loves. We can tell stories about our hates and fears in the hope that we reach a new understanding of ourselves and of each other.

I will caution you once again that you must not worry about the stuff of networks. When you start thinking about the stuff, instead of the community, you are telling the story of the vendor selling the stuff, and not the story of your own community. If a vendor talks unintelligibly about their stuff, insist that they speak in plain English about the benefits of their products

and services. If they won't do this simple thing, I would encourage you to show them the door and tell them not to return until they are ready to talk clearly and simply about their products.

The great power of the 'net is that it allows us to return to storytelling, which is a fundamental and important human activity. Computers and networks will never tell stories, but humans can and will. Television and the movies are storytelling of a kind, but there we must listen to the stories of others. The 'net lets us tell our own stories, it gives us an audience, and it allows us to talk directly to our listeners in our own words. Web logs, or blogs, allow a single person to tell his or her story with potentially the entire world as an audience. In just three years, millions of blogs have blossomed across the world, and are credited with helping the spread of freedom and democracy. Blogs are giving ordinary people the opportunity to share their stories, their expertise, and their wisdom with others.

This is why the 'net is important--we lost something during the Industrial Revolution when we began changing from small, tightly knit communities to what has evolved into the faceless global suburb. We must take our communities back, and we must use these new technologies to tell our stories, one at a time, to whomever will listen.

About the author

Dr. Andrew Michael Cohill is the CEO and President of Design Nine, Inc. He is an information architect with an educational background in architecture, ergonomics, and computer science. Cohill has an international reputation for his work advising communities on technology and telecommunications issues. In the United States, he has worked with rural communities across the country, with recent work in Virginia, Illinois, New Mexico, Louisiana, Pennsylvania, New Hampshire, and Texas.

He was the Director of the world renowned Blacksburg Electronic Village (BEV) at Virginia Tech from 1993 to 2002. He is a widely published writer, and author and coeditor of the popular book about Blacksburg (*Community Networks: Lessons learned from Blacksburg, Virginia*), now in its second edition. He served as co-chair of the Governor's Task Force on eCommunities for the Commonwealth of Virginia for the duration of the task force (2001-2002).

- He is a member of the Wireless Future Advisory Board.
- He is a member of the National Advisory Board for Communities of the Future, a national coalition of thinkers and policy makers concerned with the sustainability and health of communities.
- He is a member of the Association For Community Networks, and has served two terms on the Board of Directors and two terms as President.
- He is a member of the Rural Telecommunications Congress, has served on the Board of Directors, and served as Secretary.
- His *Technology Futures* news blog on community telecom and technology is read by thousands monthly (http://www.designnine.com/news/).

In the nineties, Blacksburg became widely known as the "most wired community in the world." Blacksburg had the first residential broadband in the world, the first business park with broadband as an amneity, the first library with broadband, and the first school system with broadband in every classroom. By the fall of 1999, more than 87% of the town's residents were using the Internet, and over 75% of the town's businesses had made the Internet a regular part of their marketing. Today, virtually all of Blacksburg's businesses and residents have one or more broadband access options at home, at work, or at both. Cohill served as Director of the community network project from July of 1993 until the spring of 2002.

Cohill's work at the BEV became a widely copied model for "connected communities" around the world. In the past three years, Cohill's work has been closely connected to telecommunications master planning and economic development. He recently completed technology master plans for northern New Hampshire and southwestern Virginia, and is currently working on two fiber to the home projects. He presents seminars regularly to communities leaders and economic developers on strategies for getting communities connected to the Creative Knowledge Economy, and his *Knowledge Economy Roadshow* seminar has been webcast to a nationwide audience.

He is wide demand as a speaker on economic development issues and technology because of his clear explanations, shrewd insights, and engaging manner. For more information about Cohill's work, send a note to cohill@designnine.com or visit the Design Nine Web site at www.designnine.com.