

Broadband for All

Andrew Michael Cohill, Ph.D.



TEN PRINCIPLES OF COMMUNITY BROADBAND

1 UNIVERSAL ACCESS

Every business and home should have the same level and quality of service.

2 GEOGRAPHIC EQUALITY

Every area of the U.S. should have the same level and quality of service.

3 LEVEL PLAYING FIELD

Every service provider should be able to play by the same rules.

4 PUBLIC/PRIVATE PARTNERSHIPS

Public telecom investments should create private sector business opportunities.

5 FIBER AND WIRELESS

Wireless is essential for mobile access. Fiber is needed for high bandwidth applications.

6 COMMUNITY CONTROL

Communities should have control over their economic future.

7 MULTI-SERVICE NETWORKS

Multi-service open networks create true competition and lower prices.

8 SYMMETRIC BANDWIDTH

Upstream and downstream data capacity should be equal

9 UNLIMITED BANDWIDTH

Every home and business should have the capacity to use any service.

10 TIME IS OF THE ESSENCE

Communities can't wait any longer.

Saving our communities

A Blueprint for American Telecom

In the past several years there has been a growing understanding that telecom has become essential infrastructure for American communities. Communities large and small have been working to understand how to make investments in infrastructure that will complement broader community and economic development goals. The changing economic development landscape has made affordable telecommunications services critical to attracting and retaining businesses.

Rural regions that have lost manufacturing jobs may be able to create new kinds of good paying work from home opportunities, but those jobs require affordable broadband connections. These new jobs are turning neighborhoods into business districts.

In the fifteen years since one of the first broadband community networks was begun in Blacksburg, Virginia, we have had the opportunity to observe a wide variety of public and private efforts to expand broadband services in communities. This paper discusses the best practices and lessons learned that have been collected from many projects across the United States. Ten principles have emerged that can be used to guide the development of community broadband projects.

Universal Access

Every home and business should have the same level and quality of service. This is an economic development imperative as more and more people work and learn from home. Children, young adults, and workers in retraining

programs, regardless of where they live, need equal access to learning resources, including high bandwidth video-enriched learning environments and live and streamed video lectures. New telemedicine and telehealth services offer the promise of improving access to health care while lowering costs.

Geographic Equality

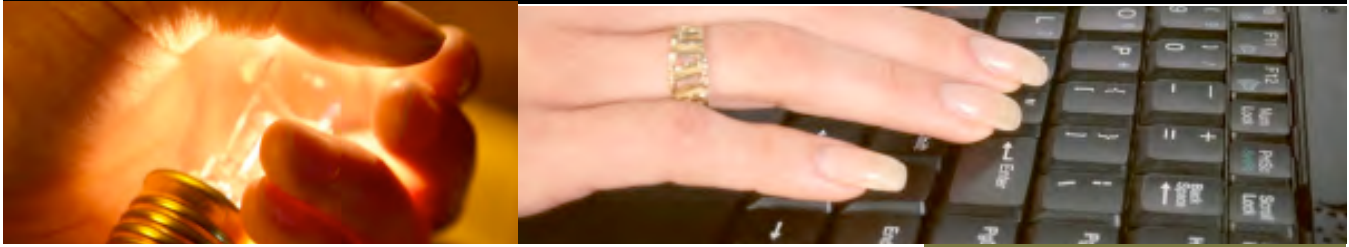
Every area of the U.S. should have the same level and quality of service. Residents of inner cities and rural areas of the United States should be able to access and use the same learning resources and job opportunities as any other area of the country.

Level playing field

Every service provider, small and large, should be able to play by the same rules. The 1984 and 1996 efforts to reform telecom have not entirely succeeded in creating equality of competition. True competition creates more and better kinds of services and lowers the cost of services for all users, including governments and schools. We need as little regulation as possible so that innovation is not stifled and so that small and large firms can compete fairly for customers.

Public/private partnerships

We can manage telecom just the way we manage roads, which is a mature and time-tested public/private partnership. Communities build and maintain roads, but private sector businesses are free to use those roads to sell goods and services directly to their customers. Regulation is minimal, and government does not compete with the



private sector. Instead, modest public investments create enormous private sector business opportunities. We need to build digital road systems.

Fiber and Wireless

Neither fiber nor wireless alone is a complete solution for business, personal, government, and telecommunications needs. Wireless is essential for mobile access to network services like voice and the Internet, but it is not a business class solution and will not support economic growth in a meaningful way. Fiber has the capacity to support any high bandwidth business, government, telemedicine, or entertainment service a community will need for decades, but does not provide mobile access to the network. Communities need both and should plan for both. The good news is that with the right business model, any community, even in a rural area, can afford a world class, fully integrated fiber and wireless network that will support business attraction and retention.

Community Control

Communities must have control over their economic future. Achieving this goal requires investments in telecom infrastructure at the local and regional level. Public development of shared digital roads, managed just as traditional roads are managed, lowers costs for private sector service providers and creates new opportunities for start up companies and incumbent providers that have said they cannot afford to build fiber networks in rural areas.

Multi-service network

Multi-service open networks create true competition and lower prices. This approach is fundamentally different from the way telecom networks have been built

and managed in the past. In a multi-service network, each category of service (e.g. telephone, TV, Internet access, telemedicine, video on demand, and more) has multiple service providers offering many different service packages and bundles at a variety of price points. The community digital road system makes this model easy to implement and to manage, encourages innovation in service offerings, and lowers the price of telecom services because all providers share a single high performance digital road system.

Symmetric Bandwidth

Upstream and downstream data capacity should be equal. Most current broadband systems restrict upstream data capacity to a fraction of the downstream capacity. These limits on customers chokes off economic development, entrepreneurial activities, and work from home opportunities.

Unlimited bandwidth

Every home and business should have the capacity to use or provide any service from any location. A well-designed network should be capable of delivering any amount of bandwidth to any site in the community. Bandwidth should be defined in terms of the lower acceptable capacity, not the upper limit on capacity. Limits on network capacity and use simply tells some businesses "Don't put your business in our community."

Time is of the Essence

Communities can't wait any longer. Virtually all businesses, large and small, now use the Internet. Affordable access to telecom services is now a business essential, and many kinds of new job opportunities require broadband.

CHARACTERISTICS OF A MODERN MULTI-SERVICE OPEN NETWORK

- A single shared digital road network available for all public and private use.
- A minimum of 100 megabit connections to every home and business as the minimum acceptable bandwidth.
- Multiple service providers offering many kinds of services, not just "triple play" or "quadruple play."
- Seamless, fully integrated fiber and wireless network with end to end fully automated service provisioning.
- A robust business and financial model that not only finances the network but creates new streams of income for other community and economic development projects.

ABOUT DESIGN NINE

Dr. Cohill is President of Design Nine, which specializes in designing and implementing next generation fiber and wireless broadband infrastructure, with more than seventy years of staff experience. The firm offers broadband planning, design, and project management services, including early stage needs assessment, financial analysis, business model development, organizational design, network design and project implementation.

Design Nine, Inc.

2000 Kraft Drive, Suite 2180
Blacksburg, VA 20460
540-951-4400
info@designnine.com
www.designnine.com