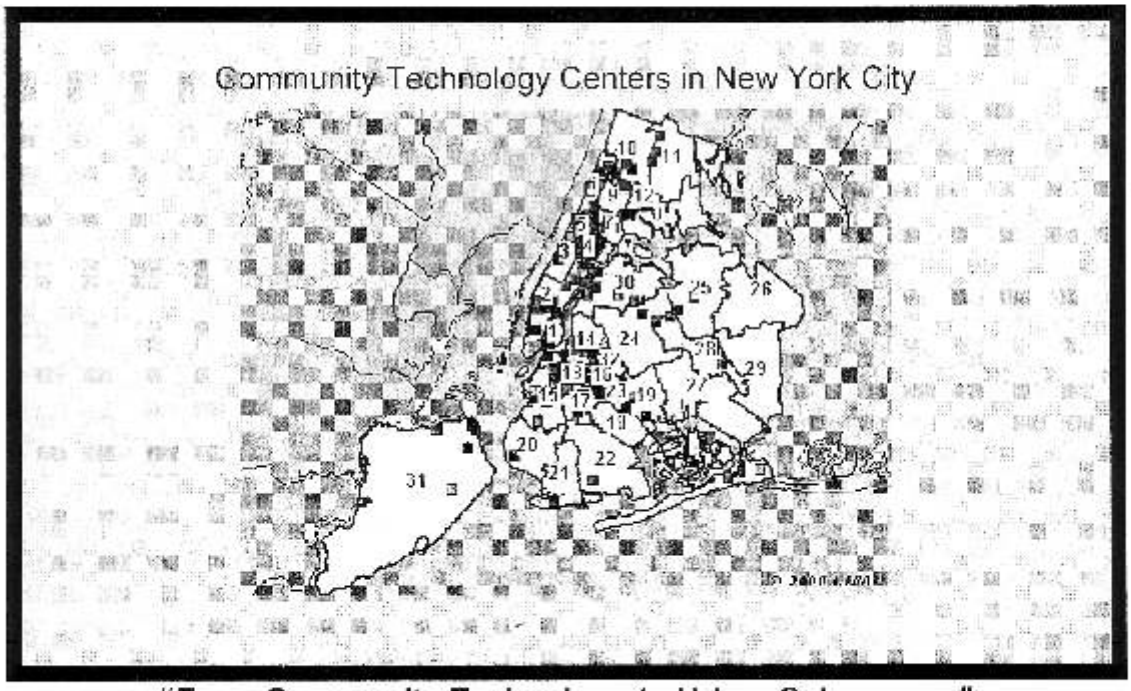
The New York City Urban Cyberspace Initiative

A joint effort by the New York Online Neighborhood Electronic Network, the Urban Cyberspace Company and the Community Technology Center Laboratory



"From Community Technology to Urban Cyberspace"

A Model to Deploy Metroscale Broadband Wireless Throughout the Borough of Queens

Testimony Delivered to the Broadband Advisory Committee on March 3, 2008

New York Online Neighborhood Electronic Network

URBAN CYBERSPACE COMPANY

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Introduction and Background

Good afternoon and allow me to thank you Madame Chair and the Broadband Advisory Committee for this opportunity to present testimony on this critical issue.

My name is Bruce Lincoln and I am the Founder and Chief Design Scientist of the Urban Cyberspace Company/ Community Technology Center Laboratory. Currently, I am an Affiliated Scholar at the Columbia Institute for Tele-Information (CITI) where I am organizing a conference on Ultra Broadband and the Second Digital Economy. I am also the resident community technologist at the School of Engineering and Applied Science where I teach a course on Science, Technology and Society which is focused on the development of a pilot community technology and entrepreneurship center in Harlem's Grant Houses which is designed as a model to be replicated in NYCHA properties throughout the five boroughs.

In the Information Age, every citizen regardless of socio-economic status and geographical location must have robust and useful access both fixed and wireless to the broadband Internet and the requisite on-demand training and services necessary to make use of these resources for personal, family and community betterment.

I recently attended the State of the Internet Conference as well as the Future of Broadband in Washington on January 29th and 30th. I was surprised that at the Future of Broadband Pre-Conference the fastest speeds that were mentioned in The Big Broadband report commissioned by EDUCAUSE were in the 10 Mbps to the 100 Mbps range. In light of the comparative speeds of the residential Internet in other countries such as Korea, Japan and Sweden, 10 to 100 Mbps is slow and woefully inadequate if the goal is to deploy life critical applications such as immersive distance learning and telemedicine applications. If we are talking about the deployment of the next generation of the Internet in Queens and throughout New York City at the very least given the lifespan of the infrastructure relative to cost, we have to be talking about symmetric bandwidth both upstream and downstream in the gigabit per second range.

Not "Big" Broadband but "True" Broadband: The Technology of Metroscale Regional Cyberspace Initiatives (MRCI)

Technologically underserved markets in both urban and rural communities when taken in the aggregate can be considered as representing an untapped multi-billion dollar marketplace. However when viewed individually, these communities do not fit into the cost-benefit model of the incumbents and new entrants. The return-on-investment requirement of the incumbents forces them to cherry-pick, that is, choose only those large-scale markets that have the optimum

combination of potential business and residential customers with income levels that will allow them to recoup a multiple return on their initial capital investment. This model then excludes low-income urban communities as well as rural communities with low population densities spread over large geographic distance such as what we find in the South. Whether deliberate or inadvertent, this results in electronic or information redlining. This makes large-scale investment sense when a company such as an incumbent telco or cableco has to optimize shareholder value. Incumbents look at standard technology rather than a diversity of technologies that are best suited to local needs.

When the goal is equitable access regardless of income or location to universal, affordable broadband then this cost-benefit model has to be inverted and another model has to be developed for widespread use and application that takes into account indirect benefits. In this case that model is that of Metroscale Regional Cyberspace Initiatives or MERCI.

Metroscale Regional Cyberspace Initiatives or MERCI is based on a different physics, engineering and economic model than that used by the incumbents. The incumbents are bound up in the physics of copper coaxial networks whereas MERCI is based on the physics of fiber optic networks. Copper is a high maintenance technology relative to fiber. Copper corrodes over forty years. Because of this, the incumbents are bound to extract as much value as possible over this period of time. The economic model of the telcos and the cablecos is based upon the amortization of their initial investment over the life of their copper coax network. DSL and cable modem represent mature technologies that are fully depreciated and we know from economic theory, that an incumbent because of their sunken investment has limited incentive to adopt new technologies. Also, both DSL and cable modem have an upper limit to their possible bandwidth in the megabit per second range. Fiber optic networks on the other hand possess essentially unlimited bandwidth.

MERCI is a hybrid model based upon a model developed by Nicholas Negroponte at MIT's Media Lab that uses fiber optic connectivity as the backbone technology and wireless technologies as the delivery system to the end user. The MRCI model can be applied to meet the present and future broadband wireless needs of New York City.

The business case of such a network when built, ab initio, i.e. without the legacy, is far superior to the incumbents' business case. The economics of the MERCI model is based upon the cooperative ownership of the network by major communal institutions. The end users are both public municipalities and private consortia made up of community-based organizations. We know from a wide body of experience from around the world, that such a consortium could be organized and empowered in the Borough of Queens. The network would be an open network providing transport for the delivery of local content, applications and services.

The cost to deploy such a network is much less than that to deploy a conventional copper wireline network because of the Negroponte/MIT model and because wireless is uniquely efficient for local distribution and fiber is uniquely efficient for linking local nodes. The hybrid nature of the MERCI network topology can also use WiMax transmission in order to provide backhaul to hard to reach areas where fiber optic connectivity is not available.

The MERCI model is not based upon the accelerated extraction of a revenue multiple. It is based upon increasing the social net benefit to the end user cooperative by providing economic stimulus in the form of job creation, the delivery of lifelong distance education, telemedicine, e-government , civic e-services and entertainment over the system. However, this should not to be misunderstood, the MERCI model is a sound revenue model which breaks even in the course of thirty-six months and then begins to show a profit which increases by some proportionate multiple over each ensuing year when looking at the direct return.

The MERCI Model as Real-World Basis for Enlightened Public Policy

The MERCI model is currently being implemented by the Urban Cyberspace Company / Community Technology Center Laboratory in a set of test market communities located in Harlem, New York; Jackson, Mississippi and the Mississippi Delta; Columbia, Bennettsville and North Charleston, South Carolina with plans to expand to the Baltimore- Washington area and New Orleans. The goal is to pilot a demonstration project in the Upper Manhattan Empowerment Zone that will serve as a proof-of-concept. The proof-of-concept will become the basis for a white paper which will capture the investment model and the replication model. Of course, such a model could be adapted to the particular needs of the Borough of Queens.

The ultimate objective is to use the white paper as a tool to support progressive policy makers both in the effort to craft legislation that will stimulate the Next Generation Internet economy targeted to the creation of regional innovation economies.

In conclusion, a metroscale innovation economy will catapult New York City back into the forefront of the Internet and restore our overall global competitiveness by creating a knowledge-based workforce that will drive the digital economy. In the spirit of tele-democracy where everyone regardless of socioeconomic status or location has ubiquitous access to the Internet, we look forward to working closely with the Committee on Technology and Government and the Broadband Advisory Committee to make ubiquitous Internet access commonplace. Thank you.