ICT IN NEW YORK CITY

What is the current status of information and communications technologies and infrastructure in New York City, and how does the city confront the issues associated with it?

Essay

by

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Introduction

New York City is undoubtedly one of the major global cities in today's world, if not the epicentre of Western civilisation. Being at the forefront of the information society, information and communications technology (ICT) and infrastructure have come to be the very lifelines by which New York City operates. They are as vital to its economy and society as its subways, highways, bridges, harbours, and airports (NYC Economic Development Corporation et al., 2005). It is therefore of interest to analyse and understand the current status of information and communications technology in New York City, as well as its economic and social implications for the present and the future. Due to the limited scope of this text, the focus will be on the five boroughs that make up New York City – the Bronx, Brooklyn, Manhattan, Queens, and Staten Island.

ICT Infrastructure in New York City

As a direct consequence of its dominant role in the global economy, New York City's downtown area has become “the world's most wired central business district” (Ibid.:19). The massive transatlantic submarine fibre optic cables that connect the United States with Europe and form some of the world's most important Internet backbone networks come ashore predominantly in the New York area. Approximately three million miles of fibre optic cabling run through the five boroughs, and more than 3,700 buildings have direct fibre optic links – more than any other city in the U.S. Altogether, an Internet bandwidth of roughly 430 gigabits per second terminate in the city's area. Although not yet achieving true universal residential broadband Internet access, the city is far ahead of any of its domestic rivals in offering multiple competing technologies, thereby stimulating competition. However, in contrast to many other metropolitan areas around the world, the New York City subway system still does not offer a wireless cellular phone service, a fact that impedes both public safety and its attractiveness to businesses (Ibid.; NYC Economic Development Corporation, 2006b). Nevertheless, New York City remains an appealing location to do business, and information and communications technologies consequently play a major part in its economy.

ICT and New York City Economy

Along with the entire Western civilisation, New York City's economic system after the Second World War gradually shifted from a predominantly manufacturing-based one to a services and information based one, ultimately leading up to today's information economy (Knox and McCarthy, 2005). Consequently, employment figures in the city's manufacturing occupations fell from 27 percent in 1960 to just 7 percent in 2000, while the services sector gained along those same proportions (Orr and Topa, 2006). Due to its traditional position as a centre of financial institutions and media and publishing companies, all of whom have become increasingly dependent on advanced information technologies, and its world-class universities supplying the necessary high-skill labour force, New York City managed to come out on top of this major economic restructuring process.

As rental prices in Midtown and Lower Manhattan have risen exponentially, global corporations as well as smaller companies increasingly choose to set up back offices in the outer boroughs or the surrounding metropolitan area. These back offices rely heavily on dedicated high-bandwidth communication links with their downtown headquarters (Graham and Marvin, 1996). Real estate developers have long recognised and seized this demand, building dedicated high-tech commercial buildings to fit the purpose. One such endeavour is the *MetroTech Center*, a US$ 1 billion complex built by Forest City Ratner Companies at the heart of the MetroTech Business Improvement District (BID) in Brooklyn. Offering five million square feet of office space for companies such as JP Morgan Chase & Co., KeySpan Energy, and Verizon, and surrounded by educational institutions such as Polytechnic University, New York City Technical College, and Long Island University, it “has been a major catalyst for the borough's economic revitalisation” (MetroTech BID, 2005, 2006). Another such business complex is *Citicorp Tower*, a centre of finance, lying at the heart of Long Island City in Queens (Long Island City Business Development Corporation, 2006). Of course, such dedicated high-tech structures are not confined to back offices outside downtown Manhattan. Updated in 1995, a former investment bank headquarters became the *New York Information Technology Center*, situated right in the heart of New York's financial district at 55 Broad Street. Today, it houses such

global corporations as Cap Gemini, Nokia, and Sun Microsystems, among others (Moss and Townsend, 2000; NYC Economic Development Corporation, 2006b). Equally, companies do not just migrate out of Manhattan, but some also set up business right in its centre. One of the city's largest employers, Verizon, moved to its new headquarters at 140 West Street in Lower Manhattan in 2005 after being forced to leave after the 11 September 2001 terrorist attacks, bringing with it 1,500 jobs (NYC Economic Development Corporation, 2005).

Although advanced information and communications technologies enable routine functions to be moved to more cost-effective locations, face-to-face communication remains vital, especially for high-level decision making (Graham and Marvin, 2000). Accordingly, commuting patterns in the New York region remain fairly traditional, as approximately 775,000 workers commuted into New York City from outside the five boroughs in the year 2000, while only 242,000 travelled outward to their workplace. And commuting distances get longer, as information technology can render time spent on the road more productive (Bram and McKay, 2005). Furthermore, as residential broadband Internet access becomes ever more ubiquitous, small home-based businesses are increasingly becoming an important part of the local economy (NYC Economic Development Corporation et al., 2005). However, as Edward Glaeser (2005) of the Federal Reserve Bank of New York suggests, New York City's economic future vitality is not certain, as even financial institutions, traditionally located in Lower Manhattan, increasingly move to the “car-oriented edge cities surrounding the metropolis.”

To counter that trend and help keep the city's economy strong and diversified, several technology business incubators have been set up to help start-up companies looking for funding and business development expertise. Some of those institution are *Second Century Innovation and Ideas* of Pace University in Lower Manhattan, the *Brooklyn Enterprise on Science and Technology* of Polytechnic University (situated in the MetroTech BID), and the *SoBRO Venture Center* in South Bronx (NYC Economic Development Corporation, 2006b; South Bronx Overall Economic Development Corporation, 2006).

One of the strongest economic powers in New York City after its financial institutions is what has come to be known as *Silicon Alley* (Graham and Marvin, 2000). This new media and Internet cluster of companies situated in East Village, the Flatiron District, and SoHo has shown remarkable growth in the 1990s, largely independent from government intervention or the help of local universities, both of which are traditionally associated with Silicon Valley-like cluster developments (Diebold Institute, 2000). Before the “dot-com bubble” burst in early 2000, *Silicon Alley* had sprouted more than 4000 new companies with several billion dollars in public and venture capital, and between 1994 and 1998, approximately 40,000 new high-technology jobs were created. Consequently, *Silicon Alley* has become one of the world's leading centres for the Internet industry, especially in the content production and consulting and design services sectors. Even though New York City government played only a minor role in the cluster's creation, its Prospect Street Ventures and Discovery Fund helped in setting up new media entrepreneurs. Although suffering greatly from the economic downturn following the “dot-com” bust and the 2001 terrorist attacks, *Silicon Alley* is regaining its strength as start-ups once again are “popping up like mushrooms” and are “involved in heady high-dollar deals” (John, 2006).

ICT and New York City Society

Even though New York City has seen a steady rise in worker incomes from 20 percent above the national average in 1980 to more than 60 percent in 2003, thereby reflecting the shift to an information society, not everyone can enjoy this advantage. For low-income households, advanced communications technologies act mostly to increase their social and economic distance from their fellow citizens, as they can hardly afford broadband Internet access or, in some cases, even wireless cellular phone service. This can cause “splintering” or “capsularisation”, as those in the lower class are bypassed by the high-technology society (de Cauter, 2004). To counter this effect, New York City government introduced franchise fees for infrastructure providers to use the city's light poles as wireless cellular service access points. Charging the lowest fees in neighbourhoods with a large

number of households without even basic telephone service, the city “provided a direct incentive for [companies] to improve services in low-income areas.” Consequently, global telephone company IDT has introduced “its low-cost, pre-paid wireless phone service” in those areas (NYC Economic Development Corporation et al., 2005:56-57).

Since low-income households are likely not to possess the knowledge needed to participate in the information society, enabling access to such services is not enough to bridge the “digital divide” (Graham, 2002). To help the underprivileged gain that required knowledge, some neighbourhoods have set up facilities for that purpose. One such facility is the *SoBRO Community Technology Center* in South Bronx, where the public has access to 40 computer workstations with high-speed Internet access as well as teachers to guide them. Furthermore, SoBRO together with infrastructure provider Urban Technologies has started an initiative called the *Home Networking Services* to provide low and moderate-income housing complexes with Internet and phone access (South Bronx Overall Economic Development Corporation, 2006). The *Hunts Point Internet Cafe*, established in 2002, is another location in the Bronx where residents can access the Internet, develop their communications and computer skills, and get help with building a resume and finding a job (Hunts Point Economic Development Corporation, 2006).

Even though these initiatives are necessary and laudable, they are still in too low numbers and too underfunded to have a fundamental impact on the problems of inequality created by the information society. Furthermore, those most unwanted by society – the 31,476 homeless citizens of New York – still have almost no possibility of getting either the knowledge or access needed to be included in it (New York City Department of Homeless Services, 2006).

ICT and New York City Government

The Telecommunications Act of 1996 liberated the telecommunications market by opening it up to fierce competition. To enable this open market within the entire United States, the act prevents

local governments from directly imposing regulations on infrastructure providers and puts most public policy power regarding it at the state and federal level (Federal Communications Commission, 1996). Even so, because of New York City's status as the country's “most wired city”, its government is the only city government that is part of the Network Reliability and Interoperability Council of the Federal Communications Commission, the federal body that regulates the telecommunications market (NYC Economic Development Corporation et al., 2005). Even with such a restriction imposed on local governments, New York City has done much to add planning and structure to the market, as well as utilising information and communications infrastructure to enable public services.

The body overseeing all local information and telecommunications infrastructure planning within New York City government is the Department of Information Technology and Telecommunications (DoITT), situated at the MetroTech BID. The City's fastest-growing agency, it engages in partnerships “with private service providers to implement major technology initiatives” and provides a host of services to companies and the public alike (NYC Economic Development Corporation, 2006b). Working together with almost every other local government agency, DoITT runs the official website of New York City, NYC.gov, and maintains and updates the other agencies' different web sites to provide the public with information about and access to programs, forms, application procedures, and documents through the Internet. Furthermore, it operates *CityShare*, a closed intranet website for the city's more than 300,000 employees to share information, access common resources and forms, and provide tools to make their jobs more efficient. DoITT also operates the *Criminal Justice Information System* that “allows agencies to collaborate and track juveniles through the criminal justice system”, *DataShare*, a database that “allows criminal justice and law enforcement agencies to share information about criminals”, and the city's Geographical Information System (DoITT, 2006).

Other services and agencies set up by New York City government regarding information and communications technologies include the Telecommunications Policy Advisory Group, a public-

private partnership set up by Mayor Michael Bloomberg to advise on the future infrastructure needs of the city, and the New York City Media Group, which manages the city's broadcast television station, five cable television networks, a radio station, and a television production company (NYC Economic Development Corporation, 2006a; NYC Media Group, 2006). Moreover, two public-private partnership programs to develop communications infrastructure in commercial buildings and to offer these buildings to start-up and small companies at affordable prices were set up: the “Plug'n'Go” program and “Digital NYC: Wired to the World”; both programs have been terminated after several years of successful operations (Empire State Development, 1999; Miles, 2000). Two projects funded by the “Digital NYC” program are *BronxSmart* in the South Bronx and *Downtown Brooklyn Connected*, which encompasses companies and buildings in the area of “DUMBO” (Down Under the Manhattan Bridge Overpass) and the *MetroTech Center* (South Bronx Overall Economic Development Corporation, 2006; Downtown Brooklyn Connected, 2006).

ICT and the 11 September 2001 Terrorist Attacks

During the attacks on the World Trade Center towers in Lower Manhattan on 11 September 2001, vital telecommunications links were interrupted. Never in the history of the information society was so much telecommunications infrastructure destroyed at a single point. Because of New York City's status as global telecommunications infrastructure centre, this disruption both illustrated the resilience and fail-safe nature of this infrastructure and at the same time highlighted particular shortcomings and single points of failure. In order to analyse and remedy these weaknesses, the Lower Manhattan Telecommunications Users' Working Group was established, which published its findings in a report in August 2002. It identified the most severe single point of failure as Verizon's central office at 140 West Street, on which World Trade Center 7 collapsed, cutting access to its services for nearly 35,000 downtown customers. To remedy this situation, the destroyed infrastructure has been rebuilt in such a way that Lower Manhattan today “is served by six distinct options for network redundancy” (Lower Manhattan Telecommunications Users' Working Group, 2002:4). This has not only served to make the system more secure, but has also increased competition among

providers.

Conclusion

New York City's information and communications systems and infrastructure are among the most sophisticated in the world, not least because it is of vital interest to the many global corporations whose headquarters are situated there – its vast and powerful customer base makes it more than feasible for infrastructure providers to invest in the city. Consequently, the city attracts a highly skilled and creative workforce from around the world that makes New York a true multicultural place. The dangers of being at the top, however, are that the citizens at the lower end of the social spectrum are more and more marginalised and forgotten, or accepted as an inevitable by-product of advanced civilisation. New York City, probably more so than any other North American city because of its status as role model, must therefore act more rigorously to both educate the poor in the use of today's telecommunications technologies and provide them with the means to access the digital world. Utilizing this to make information more easily accessible via New York City government websites is a first step, but much more needs to be done.

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