

The Development of Philadelphia's Municipal Wireless Network

The city of Philadelphia is the fifth-largest city in the United States and prides itself on being a city of firsts. It was the site of the signing of the Declaration of Independence and the drafting of the U.S. Constitution. Philadelphia covers an area of about 135 square miles and comprises about 660,000 households. The city government has a budget of about \$3.5 billion, encompasses 52 departments and agencies, and employs 25,000 workers. Philadelphia has been one of the nation's leading cities in terms of economic, political, and cultural influence. In the last three decades, Philadelphia has experienced a reversal of fortunes. The economy performed poorly and its population declined. Socioeconomic indicators such as education, crime, and quality of life measure well below the U.S. average. However, there has been some improvement relative to previous years. For example, during the 1990s, various initiatives were implemented to improve tourism and housing, including the construction of a convention center, leading to a mini-housing boom, new restaurants, and cultural attractions.

How It All Started

In January 2000, the city elected a new mayor, John Street. At that time, the city was going through a positive period, with new residents moving in and several new visible construction projects under way, such as the new National Constitution Center. In May 2000, the mayor appointed a new chief information officer, Dianah Neff, to serve in the Mayor's Office of Information Services. This office was an important department of the city, with a budget of about \$80 million and approximately 450 employees. Neff was given a strong mandate to apply IT to improve the government. By the middle of 2002, Philadelphia had begun to gain national attention for making local government services such as permits accessible through the Internet. However, internal analyses showed that a significant proportion of the population could not benefit from e-government because they lacked access to or knowledge about computers and the Internet. A study conducted by the city in 2003 found that approximately 40 percent of the city's population identified themselves as nonusers of the Internet. Moreover, only 45 percent of population had Internet access at home, compared with a national rate of more than 70 percent. Of these

Internet users, 72 percent had slow dial-up connections, compared with a national rate of less than 50 percent (Fleishman 2006). The city was seriously lacking in Internet usage, and something drastic had to be done to ameliorate the situation. Around that time, a few small communities had begun to draw attention for setting up community-wide wireless networks for Internet access. For Philadelphia, this was an increasingly attractive option.

Initial Steps

Figure 10.4 presents a timeline of the key milestones. In January 2004, the city installed free wireless hotspots in a few test locations. There was considerable favorable media coverage of this development, and there ensued intense media speculation and interest in the city's future plans vis-à-vis such hotspots.

In August 2004, the mayor announced that a new nonprofit organization, Wireless Philadelphia, would oversee the creation of the wireless network (see <http://www.wirelessphiladelphia.org>). Wireless Philadelphia had an executive committee that was composed of several eminent and influential Philadelphians, including the chief information officer. The project planning process and eventual implementation are described using the framework outlined in Figure 10.5.

The overall project plan was carried out in three stages. In stage 1, goals and stakeholder requirements were identified and key policy issues were addressed. In stage 2, the MWN application was identified, the underlying infrastructure technology was selected, and the management and funding model to build and operate the network was specified. In the final stage, the actual network was built. The stages are rough milestones and serve to retrospectively illustrate activities that were often carried out in parallel and with considerable overlap.

Stage 1: Goals, Stakeholders, and Policy

Goals. In August 2004, Wireless Philadelphia announced its mission as follows:

Wireless Philadelphia aims to strengthen the economy and transform Philadelphia's neighborhoods by providing wireless Internet access throughout the city. Wireless Philadelphia will create a digital infrastructure to help citizens, businesses, schools and community organizations make effective use of this technology to achieve their goals while providing a greater experience for visitors to the City.

Figure 10.4 Timeline of the Wireless Philadelphia Initiative

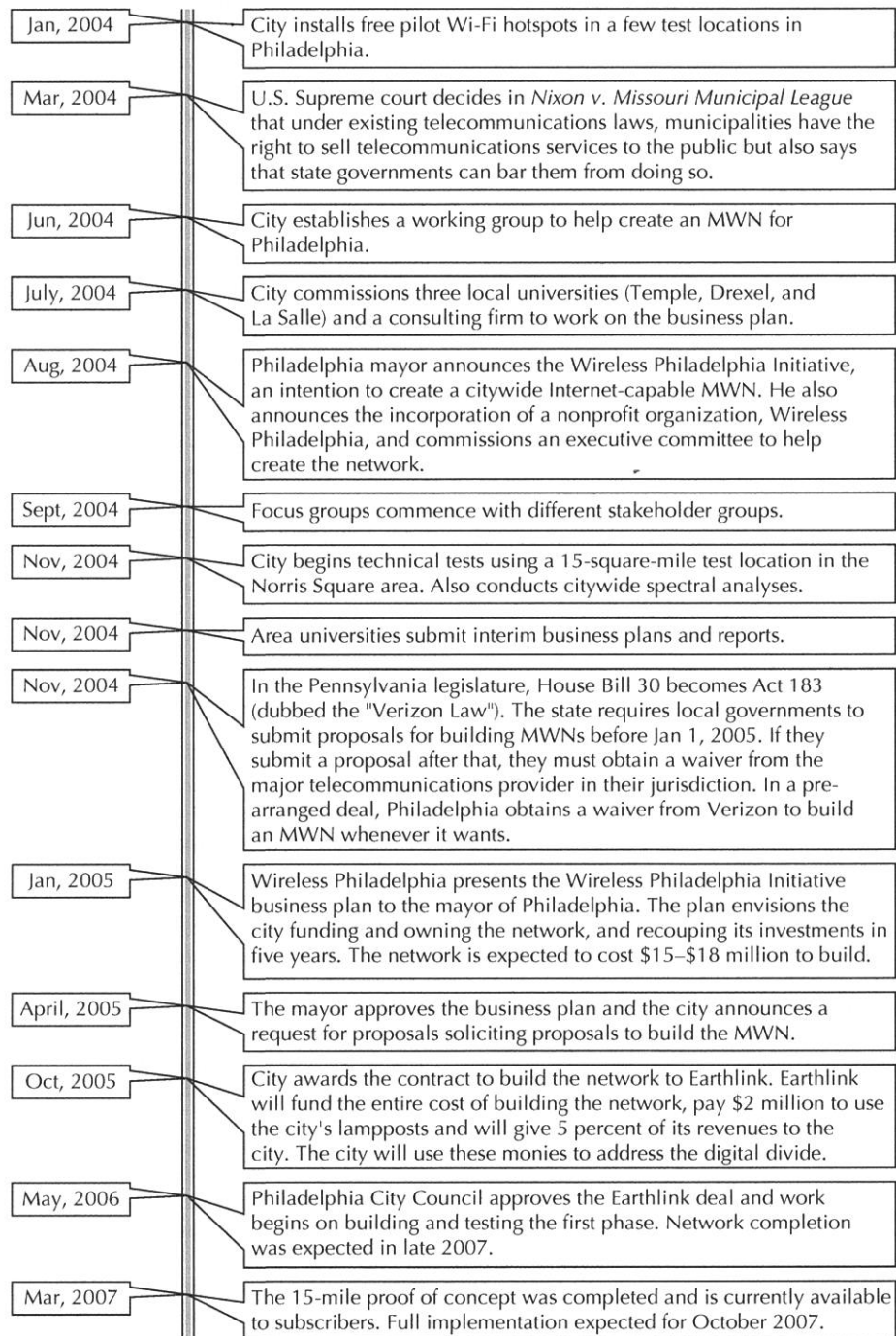
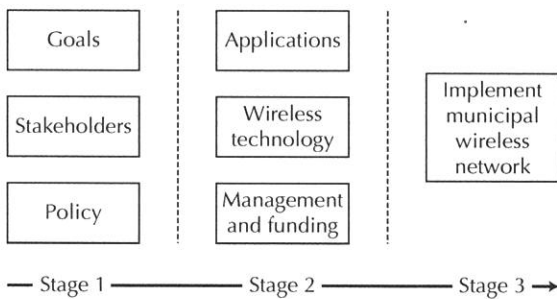


Figure 10.5 Municipal Wireless Network Framework

It was assumed that the MWN would spur improvement in the overall socioeconomic scenario, in turn leading to urban renewal. There was a cost-savings goal so that the municipality could save on internal communication costs by using its own network. Several secondary goals were also discussed by the city in its interactions with citizens and the media:

- Provide business and government users with ubiquitous Internet access
- Expand the potential market for e-government services
- Improve the attractiveness of the community for business visitors and tourists
- Give local entrepreneurs a chance to participate in building the network
- Empower citizens to participate electronically in the political process

Stakeholders. The executive committee identified the key stakeholders of the project as follows:

- City residents with access to and knowledge of Internet and computers
- City residents without access to and knowledge of Internet and computers
- City government of Philadelphia
- Business community (large and small)
- Nongovernmental organizations and nonprofit organizations
- Health care community
- Academic community (higher education and public schools)
- Business visitors and tourists

More than a dozen focus groups were conducted with more than 120 participants from the list of stakeholders. It became evident that the stakeholders had contrary

expectations and interests. For instance, some stakeholders believed that the city government should own the network, whereas others believed that it should be owned by the private sector. Some stakeholders believed that lower-income users should be allowed to use the service for free, whereas others believed that everyone should be made to pay for it. Understanding the needs of stakeholders was very helpful. These discussions elicited important issues and requirements from many different local groups and helped create a positive and inclusive atmosphere for the project in the city.

Policy. In parallel with goal setting and stakeholder analysis, Wireless Philadelphia was also grappling with state policy. In March 2004, the Supreme Court reached its decision in *Nixon v. Missouri Municipal League* supporting municipal involvement in MWNs and allowing states to decide whether municipalities in their jurisdiction could offer MWNs. In the state of Pennsylvania, Verizon was the predominant telecommunications company. According to media reports, Verizon exerted heavy lobbying pressure on the state government to bar MWNs in the state. Meanwhile, Dianah Neff, with help from the mayor, championed the cause of Philadelphia's MWN to state legislators and to the governor. At the same time, it was also reported that Neff Negotiated with Verizon to change the terms of their demands.

During stage 1, Neff was very visible in the community as a strong champion of the MWN. There had been considerable concern about city government budget shortfalls, and there was a view that instead of focusing on a risky new project, the city should instead focus on restoring funds to programs. Neff assuaged these fears by asserting that the city was not interested in acquiring monopoly rights and would welcome private sector participation. She avowed that the MWN would be built at no cost to the city.

Stage 2: Applications, Technology, Management, and Funding

Applications. At the time of the project, an number of communities around the country were experimenting with new kinds of applications to run on MWNs, such as providing police squad cars with Internet-connected laptops and installing utility meters with wireless technology to enable remote reading. It was decided that the initial focus of Philadelphia's MWN would be to provide reliable, quality Internet access to the city's population, with a particular emphasis on underserved low-income residents. Furthermore, the city