Chapter 2

# Challenges Facing Municipal Wireless:
## Case Studies from San Francisco and Silicon Valley

**Heather E. Hudson**
*University of Alaska – Anchorage, USA*

## ABSTRACT

*This chapter discusses the challenges facing municipal wireless networks in the United States. It articulates a number of case studies from Silicon Valley. The authors explores the demand, context, and limitation of technology. They conclude that selecting a suitable business model is a key success factor.*

*Wireless broadband for San Francisco: "It was the most impossible deal you could imagine. Every mayor in every small town would be famous for at least a day if they stood up on a soapbox and said, 'We are going to have this free service.'" (Settles quoted in Skidmore, 2008)*

## INTRODUCTION

Providing affordable broadband access to residents in the United States has become a key public policy issue. Residential access to broadband in the U.S. is behind that of many other industrialized countries. Specifically, the U.S. currently ranks 15th among industrialized countries in broadband access per

100 inhabitants, according to the Organization for Economic Co-operation and Development (OECD) (OECD, 2011). Adoption of broadband in the U.S. depends highly on socio-economic status. There are only 93 percent of households with annual incomes above $150,000 that have broadband access. In addition, about 45 percent of households with incomes below $25,000 have access to broadband (NTIA, 2011).

Some U.S. cities have responded to limited availability or affordable access to broadband by undertaking initiatives to provide free or low cost broadband via wireless technology (Abdelaal & Ali, 2007; Vos, 2005). To implement a citywide wireless network, also referred to as municipal wireless, cities have several different options when it comes to ownership and business models (Abdelaal & Ali, 2007; Mandviwalla, Jain, Fesenmaier, Smith, Weinberg, & Meyers, 2006). The most common model used by some small cities in and outside the U.S is the city to own and operate the wireless network by itself. Typically, the city contracts with private vendors to supply and install the equipment then operates the network. In a second model, the city selects a private entity (individual company or consortium) to build, own, and operate the network under specific terms required by the city. These terms are likely to include coverage parameters (ranging from public areas such as squares, libraries, parks, and community centers) to complete coverage of the entire city including business and residential areas. They are also likely to include pricing requirements such as providing free access to specific areas or target users, sometimes coupled with another fee-based option with higher bandwidth and/or better security.

In December 2005, the city of San Francisco issued a Request For Proposal (RFP) for a community wireless broadband network of its own. This initiative received significant national and even international attention, largely because of San Francisco's visibility in the high tech world, and the involvement of Google in the consortium selected to build and operate the network. However, the project died without any network being built.

This chapter analyzes municipal broadband in the U.S. through multiple case studies from San Francisco and Silicon Valley. In particular, it examines the reasons for its demise and compares San Francisco's approach with other models for municipal wireless adopted by nearby Silicon Valley communities. It concludes with lessons learned and unresolved issues.

# SAN FRANCISCO TECHCONNECT

## The Concept of Affordable and Ubiquitous Broadband

The city of San Francisco has a population of about 805,000 and area of 49 square miles, with an average population density of about 16,500 people per square mile. It is highly ethnically diverse, with a population that is 33.3 percent Asian, 15.1 percent Hispanic, and 6.1 percent African American, according to the 2010 census. Median household income is about $70,000, but about 12 percent of the population lives below the poverty line (US Census, 2010). Some 44.3 percent speak a language other than English at home. Providing ubiquitous Internet access to these ethnic groups will enable them to benefit from a rich pool of online resources, create their own content, and communicate with their peers and relatives.

In mid 2005, the City and County of San Francisco (both City and County have the same geographic boundaries and administration) established TechConnect initiative. TechConnect is a "strategy to promote digital inclusion by ensuring affordable internet access, affordable hardware, community-sensitive training and support, and relevant content to all San Franciscans, especially low-income and disadvantaged residents" (San Francisco, 2008). In September 2005, TechConnect released a Request For Information and Con-

## Related Content

Opportunistic Neighbour Prediction Using an Artificial Neural Network

Fraser Cadger, Kevin Curran, Jose Santosand Sandra Moffet (2015). *International Journal of Advanced Pervasive and Ubiquitous Computing (pp. 38-50).*

www.irma-international.org/article/opportunistic-neighbour-prediction-using-an-artificial-neural-network/138594

BLDC Motor Control System Based on Quadratic Single Neuron Adaptive PID Algorithm

Xiaoyuan Wang, Tao Fuand Xiaoguang Wang (2014). *International Journal of Advanced Pervasive and Ubiquitous Computing (pp. 12-25).*

www.irma-international.org/article/bldc-motor-control-system-based-on-quadratic-single-neuron-adaptive-pid-algorithm/113816

Pervasive Computing: A Conceptual Framework

Varuna Godara (2009). *Risk Assessment and Management in Pervasive Computing: Operational, Legal, Ethical, and Financial Perspectives  (pp. 1-19).*

www.irma-international.org/chapter/pervasive-computing-conceptual-framework/28447

At Sensor Diagnosis for Smart Healthcare: Probability or Conditional Probability Based Approach vs. k-Nearest Neighbour

Chetna Laroiyaand Vijay Bhushan Aggarwal (2018). *International Journal of Advanced Pervasive and Ubiquitous Computing (pp. 1-13).*

www.irma-international.org/article/at-sensor-diagnosis-for-smart-healthcare/211939

Advanced Hands and Eyes Interaction

Michael Weberand Marc Hermann (2008). *Handbook of Research on Ubiquitous Computing Technology for Real Time Enterprises (pp. 445-469).*

www.irma-international.org/chapter/advanced-hands-eyes-interaction/21779